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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

The Paroxysmal Hæmoglobinurias. By Prof. L. J. WITTS, F.R.C.P.—(*With Charts*) 115
Influenza Infection of Man from the Ferret. By WILSON SMITH, M.D., and C. H. STUART-HARRIS, M.R.C.P.—(*With Chart*) 121
Intestinal Stricture and its Association with Pernicious Anæmia. By J. C. HAWKSLEY, M.D., and Prof. E. MEULENGRACHT, M.D.—(*Illustrated*) 124
Technique of Spleen Puncture. By Prof. L. E. NAPIER, M.R.C.P.—(*Illustrated*) 126
Sodium Chloride in Diphtheria. By ALEX. MACLEAN, M.D., D.P.H. 129
Excretion of Drugs: Its Influence on Therapeutic Results. By Prof. M. KHALIL *Bey*, M.R.C.P. . 132

MEDICAL SOCIETIES

North of England Obstetrical and Gynæcological Society: Intractable Dysmenorrhœa 132
Edinburgh Obstetrical Society: Birth Injuries of the Child 133

REVIEWS AND NOTICES OF BOOKS

Principles and Practice of X Ray Therapy. By Ffrangcon Roberts, M.R.C.P., D.M.R.E..... 135
Diseases of the Eye. By Sir J. Herbert Parsons, F.R.C.S., F.R.S. 135
A Hundred Years of Medicine. By W. E. B. Lloyd, M.R.C.S. 135
Medicina Italica. By Prof. A. Ferrannini 136
Elementary Surgical Handicraft. By J. Renfrew White, F.R.C.S..... 136
Toxæmias of Pregnancy. By Dame Louise McIlroy, F.C.O.G., M.R.C.P..... 136

LEADING ARTICLES

MEANS AND NEEDS 137
MEDICAL STAFFING OF MENTAL HOSPITALS 137
IDIOSYNCRASY AND TOLERANCE 138
MEDICAL ARGONAUTS 139

ANNOTATIONS

Tuberculosis in Parents and Offspring..... 140
Bad Gastein in Fête..... 140
"De Generatione Animalium" Analysed 141
Fractures of the Lateral Condyle of the Humerus 141
Chest Troubles after Anæsthesia 142
The Surgical Temperament 142
Dermatitis Exfoliativa following Dinitrophenol... 142
Order and Life..... 143
Carbon Monoxide Tolerance 143
Royal Society: Medical Research Appointments. 144
Sight in Industry 144

PROGNOSIS

CVIII.—Prognosis in Gonorrhœa in the Male. By J. JOHNSTON ABRAHAM, F.R.C.S. 145

PANEL AND CONTRACT PRACTICE

Insured Population of London—Testing Drugs and Appliances—Chemists' Hours 152

GRAINS AND SCRUPLES

From a West-country Practitioner 153

THE SERVICES

Royal Naval Medical Service—Royal Army Medical Corps—Royal Air Force—Indian Medical Service 154

NEW INVENTIONS

Suture Instruments. By ERIC I. LLOYD, F.R.C.S.—(*Illustrated*)..... 134

SPECIAL ARTICLES

Unemployment Assistance Regulations: General Effect of Proposed Changes 146
Beit Memorial Fellowships for Medical Research... 148
Mental Hospitals: A Survey by the Chairman of the Board of Control... 149
Medicine and the Law: Standards of Sanity in Suicide—Punishment of "Professional Abortionists" 150
Scotland: Changes in Edinburgh 151
Paris: An Apocryphal Epidemic of Influenza—Pirquet Testing of Children 151
Infectious Disease in England and Wales 170

PARLIAMENT

The Midwives Bill Read a Third Time..... 155
A Debate on Malnutrition . 156
Question Time: Public Assistance Statistics—Medical Fitness for Employment in Scotland—New Unemployment Relief Regulations—Medical Services at Junior Instruction Centres—Street Collection for Croydon Hospital—Deaths From Silicosis—Small Traders and Farmers and Health Insurance—Supply of Milk to School Children—Hospital Accommodation in Kent—Deaf Persons—New Unemployment Relief Scales..... 159

OBITUARY

Sir William Hamer, F.R.C.P.—(*With Portrait*) 161

INDEX NOTICE

Index to THE LANCET, Vol. I., 1936 144

CORRESPONDENCE

Infantile Diarrhœa in Institutions (Dr. Ronald Carter, and Drs. W. E. Crosbie and Cécile Asher) 162
Focal Infection (Mr. Guy Ellingham, L.D.S.)..... 163
A New Dystrophy of the Fifth Finger (Dr. A. R. Thomas) 163
The Medical Directory (J. & A. Churchill Ltd.) 164

MEDICAL NEWS

University of Oxford 164
University of Dublin 164
University of Aberdeen ... 164
University of Sheffield 165
West London Medico-Chirurgical Society 164
Royal College of Surgeons of England 165
Epidemic of Gastro-Enteritis in Surrey..... 144
Royal Dental Hospital of London 165
Moynihan Fellowship 165
Town and Country Planning 165
Anonymous Gift to Hospitals 165
Leverhulme Research Fellowships 165
Metropolitan Hospital Sunday Fund 166
Mental Hygiene Reunion.. 166
Society for Relief of Widows and Orphans of Medical Men 166
Rebuilding Quetta Hospital..... 166
Hospital Legacies 166
Barratt Maternity Home . 166
Hospitals' Flag Days 166

NOTES, COMMENTS, AND ABSTRACTS

The Need for Keeping Pedigrees. By EDWIN GOODALL, F.R.C.P..... 168
Healthy Officials in West Africa 169
Climacteric 170
Vitamin P. 170

Medical Diary 167
Vacancies 167
Appointments 170
Births, Marriages, Deaths 170

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ADDRESSES AND ORIGINAL ARTICLES

THE PAROXYSMAL HÆMOGLOBINURIAS *

By L. J. Witts, M.D. Manc., F.R.C.P. Lond.

PHYSICIAN AND DIRECTOR OF THE MEDICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL; PROFESSOR OF MEDICINE, UNIVERSITY OF LONDON

Hæmoglobin is present in the body in two distinct forms, the hæmoglobin of the red blood corpuscles and the myohæmoglobin of the muscles. Myoglobinuria is more familiar to veterinarians than physicians, as it is not uncommon in horses and probably occurs in cattle and other domestic animals.[15] The attacks are characterised by the passage of dark urine, in which the pigment myohæmoglobin can be demonstrated, and by the rapid development of paresis and paralysis of the muscles. The disease occurs most characteristically in draught horses, who for some reason such as the week-end or a public holiday have been rested for two or three days but have been kept on a working diet. The symptoms appear within a few minutes of bringing the horse out to work and are attributed to the sudden release of lactic acid from the excessive amounts of glycogen which have accumulated in the muscles during rest. The lactic acid damages the muscles and allows the myohæmoglobin to escape into the plasma and thence into the urine. Myoglobinuria, or paralytic hæmoglobinuria as it is also called because of the association of muscular weakness with the hæmoglobinuria, is excessively rare in man, and only two cases were recorded in Schellong's[21] review of hæmoglobinuria in 1925. I shall not refer to it again.

True hæmoglobinuria is usually if not always the result of intravascular lysis of the red corpuscles, and in cold hæmoglobinuria and in blackwater fever it has been clearly demonstrated that hæmoglobinæmia always precedes the hæmoglobinuria. The oxyhæmoglobin which is released from the corpuscles soon begins to undergo degradation and is converted into methæmoglobin and other derivatives which form the connecting links between oxyhæmoglobin and bilirubin, but the problems of the nature of these intermediary substances or of the passage of the large molecule of hæmoglobin through the fine mesh of the glomerular filter need not delay us now. The urine passed during the paroxysms contains oxyhæmoglobin, methæmoglobin, hæmatin, and other hæmoglobin pigments. Albuminuria always occurs and granular and red cell casts may be present. Urobilin soon makes its appearance but bilirubin is usually absent.

Sellards and Minot[23] found that the intravenous injection of the hæmoglobin derived from more than 20 ml. of laked blood was likely to produce hæmoglobinuria in normal people. No reactions occurred in their experiments, but intravascular hæmolysis sufficient to produce hæmoglobinuria is usually accompanied by general systemic disturbances to which both the stroma of the cells and the free hæmoglobin probably contribute. The transfusion of 50 to 100 ml. of an incompatible blood may be sufficient to evoke a severe and even fatal reaction, characterised by chill and rigor, fever, headache, vomiting, and urticaria. If the patient survives the immediate reaction death may occur later from suppression of urine due partly to mechanical blockage of the renal tubules by precipitated hæmoglobin and partly to poisoning of the kidney by the products of hæmolysis. From an analysis of cases of incompatible blood transfusion Bordley[2] concluded that no case receiving less than 350 ml. of incompatible blood died from suppression of urine, and no case receiving more than 500 ml. recovered. I do not think these data from acute experiments and transfusions are applicable to spontaneous intravascular hæmolysis. In cold hæmoglobinuria and in other forms of hæmoglobinuria abortive attacks may occur in which no hæmoglobin appears in the urine, but the destruction of a considerable quantity of blood is shown by general symptoms, fall in the red cell count, jaundice, and excess of urobilin and iron in the urine. In blackwater fever and in cold hæmoglobinuria patients have survived a fall in the red cell count of 2 millions per c.mm., equivalent to the sudden lysis of two litres of blood, and it is quite usual for the red cell count to fall by ½ to 1 million per c.mm. in the paroxysms of cold hæmoglobinuria. The total amount of hæmoglobin passed in the urine in a non-fatal paroxysm is rarely more than 5 g., equivalent to some 30 ml. of normal blood, and it would thus appear that only 5 to 10 per cent. of the hæmoglobin released in the plasma escapes through the kidney. It is probable that immediate and delayed reactions and hæmoglobinuria are more closely correlated with the rate of hæmolysis and the level of hæmoglobinæmia than with the total amount of blood destroyed. The observations of Fairley and Bromfield[7] on blackwater fever suggest that death is likely to occur if the free hæmoglobin in the plasma exceeds 3 per cent.

Whatever its cause, a paroxysm of hæmoglobinuria is usually heralded by aching pains in the back and legs or abdomen, abdominal cramps, headache, and malaise. A severe shaking chill may then occur in which the temperature rises to 102°–104° F., remaining at that level for only a few minutes or for several hours. The essential element of the attack is the lysis of red cells with consequent anæmia and hæmoglobinæmia. The hæmoglobinæmia soon gives place to bilirubinæmia, but the amounts of bile-pigment produced are well within the excretory capacity of a normal liver, and there need be no visible jaundice. Indeed when jaundice occurs it is attributable to the effects on the liver of the general reaction and the anæmia, and Rich[18] has demonstrated the paradoxical fact in cold hæmoglobinuria that the less anæmic the patient and therefore the more cells available for destruction, the less likely is jaundice to occur, for the liver had not been damaged by prolonged anoxæmia. Any jaundice which appears is usually of the acholuric type and associated with an indirect van den Bergh reaction, but in severe cases the van den Bergh reaction may become direct and bile may be excreted in the urine. The white blood-cells and platelets fall to a low level at the onset of the paroxysm but later there may be leucocytosis and thrombocytosis. Regeneration of the blood is extremely rapid unless hæmolysis is continuous and protracted, and for a time there may be anisocytosis and poikilocytosis, diffuse and punctate basophilia, reticulocytosis, and the appearance of nucleated red cells and myelocytes in the peripheral blood. I have referred above to the occurrence of abortive attacks, in which there are the general constitutional effects of hæmoglobinæmia but no hæmoglobinuria. At other times hæmoglobinuria may be unattended by constitutional symptoms.

* A lecture delivered at the Institute of Pathology, St. Mary's Hospital, on May 19th, 1936.

A feature of the paroxysms, which has not attracted the attention it deserves, is the occurrence of vascular disturbances, which may threaten the life and comfort of the patient almost as seriously as the anæmia or the suppression of urine. They suggest that hæmolysis is preceded by agglutination of the red cells, or is accompanied by damage to the endothelial lining of the vessels, with a consequent tendency to thrombosis and blockage. Lesions of the same type have been produced in animals by injection of hæmolysin.[9] The vascular disturbances which occur in association with the paroxysms of hæmoglobinuria e frigore are often described as Raynaud's syndrome, but they may be followed by gangrene of the tips of the ears, fingers, toes, or nose.[12] Gangrene never results from spasm alone, and in such cases an organic obstruction must be present. The records of the acute hæmolytic anæmia of Lederer contain accounts of numb and painful fingers with red node-like spots on the hands; infarction of the spleen; abdominal pains followed by hæmorrhage from the bowel; and patchy consolidation of the lungs. At autopsy multiple thromboses have been found in the arterioles, capillaries, and veins.[16] These phenomena have caused Lederer's anæmia to be regarded as an infection. I now think that all the symptoms of the disease can be explained as a hæmolytic reaction. The vascular complications observed in the condition which I shall describe later as hæmolytic anæmia with paroxysmal hæmoglobinuria (Marchiafa-Micheli) include intracranial sinus and retinal thrombosis, mesenteric thrombosis, portal thrombosis, pulmonary infarction, and thromboses in the veins of the limbs.[1 6 17] I have not seen any description of vascular disturbances in blackwater fever, but Castellani and Chalmers [4] state that areas of necrosis are found in the liver with thrombi in the sublobular veins. We are probably justified in concluding that the dangers common to all forms of intravascular hæmolysis and hæmoglobinuria are shock, anæmia, anuria, and thrombosis.

The red corpuscles may be hæmolysed rapidly enough for hæmoglobin to escape in the urine by chemicals such as arseniuretted hydrogen, by the toxin of *B. welchii* when massive infection occurs in war wounds or the puerperium, or by the Bartonella in Oroya fever. In favism, the hæmoglobinuria following the ingestion by the sensitised subject of the bean Vicia fave, and in blackwater fever, which complicates malaria, there seems to be an aberrant immunity reaction comparable with the hæmoglobinuria of tertiary syphilis. Nothing at all is known of the ætiology of Lederer's anæmia, a disease not excessively rare in children and young people in temperate climates, which in its hyperacute forms begins with hæmoglobinuria and which is probably always due to an acute breakdown of the blood. An unexplained hæmoglobinuria may also occur in pregnancy and in the puerperium, both in women and in cattle.[9 22] But on a history of recurrent or paroxysmal hæmoglobinuria, our minds turn at once to the hæmoglobinuria of tertiary syphilis, and the main purpose of this paper is to indicate that all forms of recurrent and apparently idiopathic hæmoglobinuria are not due to syphilis, and that there are at least two other varieties of paroxysmal hæmoglobinuria which are distinct clinical entities.

Hæmoglobinuria e frigore

I do not propose to spend much time over this, the commonest form of paroxysmal hæmoglobinuria, as its salient features are now generally known.[14]

1. The patient has a history or stigmata of syphilis, often congenital.
2. The attacks can be induced by immersing the hands or feet in ice-cold water for 10 to 20 minutes.
3. The Donath-Landsteiner reaction is positive.
4. The Wassermann reaction is positive.
5. Hæmolysis does not persist between the attacks.
6. The disease is cured by antisyphilitic therapy.

In my opinion syphilitic hæmoglobinuria is probably always of the frigoric type, but cold hæmoglobinuria is not always demonstrably syphilitic.

Hæmoglobinuria from Exertion

Paroxysmal hæmoglobinuria from exertion, or Marschhæmoglobinurie, as the Germans have called it, is sufficiently rare and interesting to justify a detailed description of the following case:—

A. B., aged 22, fell from a ladder in September, 1928, when he was 17 years old, striking his abdomen with his knees. A week later he passed dark brown urine, and as he was rather puffy about the eyelids he was put to bed for eight weeks and treated for nephritis, although there were no general symptoms of ill-health. As soon as he got up and about again, the urine became blood-stained, and he was admitted to St. Bartholomew's Hospital in January, 1929. He had no discoloration of the urine while he was in hospital and physical examination was negative except for slight puffiness of the eyes. The urine contained a very faint trace of albumin but no casts, and the urea concentration, the X ray appearances of the kidneys and the blood count were all normal. Immediately he was discharged from hospital the passage of red smoky urine recurred and he was therefore readmitted to hospital in February, 1929. It was then found that the discoloration of the urine was due to the presence of hæmoglobin and that only occasional red cells were present. It was hæmoglobinuria and not hæmaturia. Further investigations at this time included a negative Wassermann reaction, a normal fragility of the red cells, and a serum calcium level of 8·4 mg. per cent. The hæmoglobinuria persisted on leaving hospital and he was again admitted in May, 1929. It was noted that immersion of the legs in ice-cold water and subsequent warming did not reproduce the attacks, nor was there any hæmolysis on cooling blood obtained by venepuncture. The attacks then ceased and he returned to work as an upholsterer, remaining quite free until the end of 1934, when the attacks recurred and finally became so frequent that he had to give up work. He was therefore readmitted to hospital at the age of 22 in March, 1935. His family and previous medical history were normal.

He was a tall, rather shambling young man over six feet in height, weight 158 lb. He confessed that he was inclined to stoop and that at table he was frequently reprimanded by his parents and told to sit up. He was intelligent, taking a great interest in his peculiar malady and coöperating eagerly in experiment. He had noticed that recently the hæmoglobinuria occurred every day if he went to work or otherwise exerted himself, but that the morning specimen was always clear and that the urine remained clear if he rested at home. He thought that the hæmoglobinuria "pulled him down" and made him weak, and that he sometimes had backache, pains in the front of the thighs or abdominal pain in association with the attacks. We were never convinced that he could predict the onset of hæmoglobinuria by general symptoms or that he would have known it had occurred had he not seen the colour of the urine. He was not in good physical training and it must also be appreciated that the passage of bloody urine is an alarming symptom and likely to be disconcerting when it happens in a public urinal.

Physical examination was again negative, and the blood count, blood-sugar, urea and cholesterol, plasma chlorides and bicarbonate, and the fragility of the corpuscles were all normal. The resting urine was chemically and microscopically normal. X ray examination revealed no evidence of abnormal position or mobility of the kidneys and excretion pyelography showed a normal renal tract.

Various experiments were carried out on the patient. It was first confirmed that hæmoglobinuria could be provoked at will by exercise on a bicycle ergometer but not by chilling the feet.

Secondly, it was proved that the pigment in the urine was blood hæmoglobin and not muscle hæmoglobin. Muscle hæmoglobin has an α absorption band which differs in wave-lengths by 30 Angstrom units from the same absorption band of blood hæmoglobin. The patient was exercised on the bicycle ergometer from 10.40 to 11.45 A.M. and then went to lunch. He recommenced exercise at 1.15 P.M. and blood began to appear in the urine at about 2 P.M. The pigment in the urine appeared to be oxyhæmoglobin with a little methæmoglobin. Coal gas produced CO Hb. Ammonium sulphide produced Hb. Sodium hydrosulphite produced Hb. Potassium ferricyanide produced Met Hb. A vacuum removed the oxygen and produced Hb. With the reversion spectroscope the absorption bands had wave-lengths practically identical with those of ordinary laked blood to which a trace of a yellow pigment had been added.

In a third experiment simultaneous examinations were made of the blood and the urine before, during, and after exercise to see if the hæmoglobinuria was associated with hæmoglobinæmia or with other signs of hæmolysis of the circulating blood. The exercise consisted of rapid walking for about 1½ hours and then a climb, walking and running up the 364 steps of the Monument. Temperature, pulse, and blood pressure showed no noteworthy changes throughout the experiment. The morning specimen of urine was free of albumin, hæmoglobin, and bile-pigment. Immediately after exercise the urine was red and gave a strongly positive guaiac reaction. Two and a half hours later it was a deep red, and in addition urobilinogen was present. After another two hours the urine was free of blood but contained urobilinogen and bile-pigment. No red blood-cells were seen in any specimen. The plasma hæmoglobin rose after exercise from 15·5 mg. per cent. to 46·5 mg. per cent. The plasma of a patient with diabetes used as a control contained 12·4 mg. per cent. of free hæmoglobin. The upper limit of the normal hæmoglobin of the plasma was found by Fairley and Bromfield [7] to be 17 mg. per cent. The indirect van den Bergh reaction rose from 0·2 units before exercise to 1·2 units after exercise. The actual amount of blood-pigment in the urine was unfortunately not measured but was probably between 2 and 5 per cent. of hæmoglobin.

—	Before exercise.	After exercise.		
	9.30 A.M.	11.45 A.M.	2.15 P.M.	4 P.M.
Temperature ..	97°	98·8°	97·2°	..
Pulse	64	88	76	..
Respirations ..	20	20	20	..
Blood pressure ..	124/76	122/74	126/76	..
Urine—				
Protein	0	+	+	0
Guaiac	0	+	+	0
Bilirubin	0	0	0	+
Urobilin	0	0	+	+
R.B.C.	0	0	0	0
Granular casts ..	Few	Few	Few	Few
Hb. content of plasma (mg. per cent.) ..	15·5	46·5	15·5	..
Van den Bergh ..	0·2 units	0·8 units	1·2 units	..
Blood count—				
R.B.C.	4,860,000	4,940,000	4,820,000	..
W.B.C.	6,600	6,100	6,600	..
Hb.	107%	103%	104%	..
Reticulocytes ..	0·4	0·5	0·9	..

In a final experiment to determine the effect of posture on the hæmoglobinuria the patient ran up and down 1000 six-inch steps in fifteen minutes, keeping his back bent as horizontal as possible. At the end of this period he was exhausted. The urine passed two hours later contained blood-pigment and urobilinogen, and hæmoglobinuria was still present the following morning. No further experiments were performed because the hæmoglobinuric tendency now spontaneously disappeared and could no longer be provoked. The patient was therefore discharged from hospital. He was seen again at the end of November, 1935, when he was very fit and had gained nearly a stone in weight. Blood count, urine, and van den Bergh reaction were normal. He had had three mild attacks of hæmoglobinuria when on holiday in August but none since, in spite of the fact that he had had plenty of exercise as an unsuccessful door-to-door canvasser for the sale of vacuum cleaners. He still had a little pain in the dorso-lumbar area which was presumed to be due to postural weakness.

B. C., an 18-year-old student, passed red urine after a long walk in December, 1935, and again in January, 1936. After a third attack he visited the out-patient department of St. Bartholomew's Hospital, where the pigment in the urine was proved to be hæmoglobin. He was admitted to the hospital for investigation about a month later, but there had been no further paroxysms and we were unable to provoke them by exertion or exposure to cold. Detailed investigations revealed no abnormality, and the Wassermann and Donath-Landsteiner reactions were negative. He was a pale, flabby youth who weighed more than the average for his height and age.

Hæmoglobinuria from exertion is rare, and in 1925 Schellong [21] was able to collect reports of only 25 cases; 24 were males and the majority were in the second decade. The patients are otherwise healthy and there is no evidence of syphilis, of hæmolysins in the serum, or of undue fragility of the red corpuscles. No effective treatment is known, but the disease apparently recovers spontaneously in all cases after a few months or at most a year, the paroxysms gradually becoming weaker and then disappearing. The present case is therefore typical in age and sex, but unusual in the long duration of symptoms and the remission and relapse. The two features which distinguish the hæmoglobinuria of exertion from all other forms of hæmoglobinuria are the relation to exercise, and especially to exercise in the upright posture, and the almost complete absence of any general systemic disturbance. Attacks cannot be induced by cold. It has frequently been noted that the attacks occur only after exercise in the upright posture, such as walking, and are not induced by exertions such as sawing wood, leap-frog, or Swedish exercises. It has also been possible to prevent the hæmoglobinuria by encasing the patient in a jacket or plaster which makes him bend forward. The disease occurs only during the period of rapid growth and recovers spontaneously when the adult stature is consolidated. Like orthostatic albuminuria it is a disease of males. It would thus appear that lordosis is an important ætiological factor. In our patient we were unable to establish a relationship between hæmoglobinuria and the position in which exercise was taken, but he certainly had a lumbar lordosis.

In hæmoglobinuria from exertion the urine may be deeply stained for several hours and its appearance is quite as striking as in hæmoglobinuria e frigore. Nevertheless general symptoms are trivial, the hæmoglobinæmia is of a relatively low order, there is no jaundice, and there is no change in the blood count with the exception of an inconstant slight leucocytosis. It is therefore hardly conceivable that the hæmoglobinuria is the result of a general intravascular hæmolysis, and it is more probable that the hæmolysis is local and confined to the vessels of the kidney.

Only a small quantity of the liberated hæmoglobin passes into the general circulation, the major part being excreted as promptly as it is produced. Under these conditions the total amount of blood hæmolysed need be very small; if a total of 1000 ml. of urine

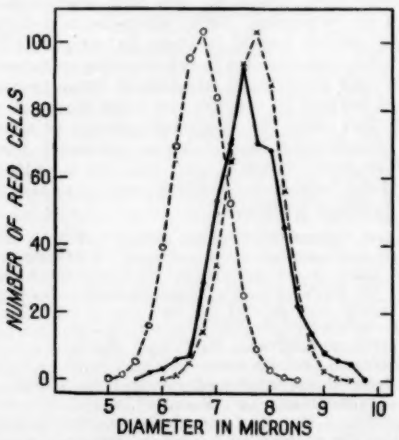

FIG. 1.—Price-Jones curve in C. D.; the dotted lines represent the ideal curves for the smallest mean diameter (6·686 μ), and the largest mean diameter (7·718 μ) within normal limits.

containing 2 per cent. of hæmoglobin were passed, the amount of blood lost would only be 20 ml. It would also appear that lordosis of the dorso-lumbar spine favours this intrarenal hæmolysis. The only subjective symptom to which this process need give rise is the slight backache which is the one constant complaint in the attacks. For all its alarming quality hæmoglobinuria from exertion is therefore a harmless abnormality, and as it recovers spontaneously it demands no very active treatment. It seems unnecessary and indeed unwise to keep the patient at rest, and there should be more benefit from active exercises to improve the postural tone of the spinal musculature.

Hæmoglobinuria recurrens vel nocturna cum anæmia hæmolytica (Marchiafa-Micheli)

The salient features of the third form of paroxysmal hæmoglobinuria to which I shall refer, and for which I can offer no adequate short title, are as follows:—

1. The disease may begin as a paroxysmal hæmoglobinuria or as a hæmolytic anæmia, but when fully established it is characterised by paroxysms of hæmoglobinuria and the persistence of hæmolysis and anæmia between the attacks.

2. The paroxysms are unrelated to exertion or to exposure to cold, but have a peculiar tendency to occur at night, though not restricted to this period.

3. Neither the cause nor an effective treatment is known, and the disease leads sooner or later to the death of the patient.

I referred briefly to the following case of this disease in my Goulstonian lectures [26]:—

C. D., a woman aged 29, was admitted to Guy's Hospital on April 18th, 1931. Her illness began abruptly and without warning in March, 1929, with the passage of bloody urine, followed in 24 hours by jaundice. The hæmoglobinuria persisted for five days and left her extremely weak, so that she was unable to rise from her bed for six weeks. Similar attacks occurred at Christmas, 1929, and in March, 1930. She was not strong enough to travel till June, 1930, when she was taken to a hospital and transfused on account of her grave anæmia. A hæmolytic crisis followed the transfusion and she was not improved. Another spontaneous attack occurred a week before admission to Guy's Hospital. In addition she was then three months' pregnant. Her only previous illness was pleurisy at the age of 23. No other member of her family had ever had anæmia or jaundice; unfortunately they lived at a great distance from the hospital so that they could not be examined.

On admission to hospital she had a severe anæmia, with a faint yellowish tinge in the skin of the face. The temperature and pulse were normal. The teeth were good; there was no glossitis; the test-meal was normal; and there was no blood in the stools. The spleen could be felt two finger-breadths below the costal margin, the liver at this time was not palpable. There was a hæmorrhage in the left disc. The other systems, including the urinary tract and the renal function, were normal. The Wassermann reaction was negative and the van den Bergh reaction was only faintly positive.

The blood count was: red cells 1,480,000 per c.mm., hæmoglobin 27 per cent., colour-index 0·9, white cells 4600, platelets 120,000. The differential white count and the clotting and bleeding times were normal. The red cells stained well and the Price-Jones curve showed a high normal mean diameter of 7·64 μ with little anisocytosis and only 3·8 per cent. of megalocytosis (Fig. 1). The resistance of the red cells to hypotonic saline was normal at the first examination (0·45/0·35), but two and a half months later it was diminished (0·55/0·45); immediately before her operation in 1933 it was again normal (0·45/0·35). The blood did not hæmolyse on exposure to cold.

The course of the anæmia during the three months she was in hospital is shown in Fig. 2. She was treated with liver, liver extract, desiccated stomach and iron in full doses, but none had any apparent effect on her condition. The reticulocyte count was always high, averaging about 15 per cent., but in spite of this the red count did not rise. She aborted nine weeks after admission with slight clinical improvement, but her hæmoglobin was only 36 per cent. on discharge from hospital. Treatment with liver and iron was continued at the out-patient department but the anæmia persisted unchanged except for temporary fluctuations and the reticulocyte count was always high.

At times the liver was palpable, sometimes extending two inches below the ribs. In September, 1931, she had overt jaundice for several days, and jaundice recurred at intervals. She was free of hæmoglobinuria till November, 1932, when she had hæmoglobinuria for about 48 hours

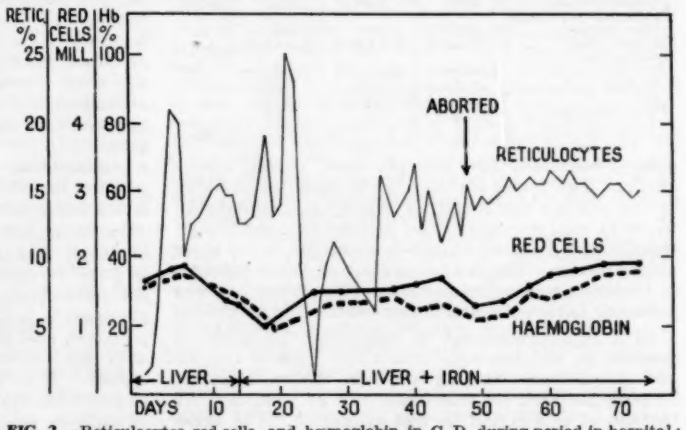

FIG. 2.—Reticulocytes, red cells, and hæmoglobin in C. D. during period in hospital; there was persistent reticulocytosis and anæmia.

and was jaundiced for the following week. Dr. J. H. Ryffel reported that the urine contained much hæmoglobin but no red cells or methæmoglobin. Another attack of hæmoglobinuria occurred in January, 1933. Although all her attacks of hæmoglobinuria occurred in the cooler months of the year, the patient did not think they were attributable to cold, as they always began in

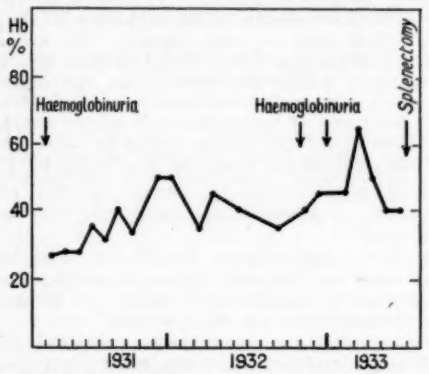

FIG. 3.—Hæmoglobin percentage and hæmolytic crises in C. D. during whole period of observation.

the early morning after a night in bed. During an attack she felt very ill and drowsy and her legs were weak. The urine was several times examined between attacks, but no hæmoglobin or iron pigment was found then.

In June, 1933, the anæmia had relapsed again after a temporary improvement and the patient decided to submit to splenectomy. The blood count was now: red cells 1,780,000 per c.mm., white cells 3600, hæmoglobin 40 per cent., colour-index 1·1, platelets 186,000 per c.mm.; a few normoblasts and myelocytes were present. The reticulocyte count fluctuated between 10 and 20 per cent.; the fragility of the red cells was normal; the van den Bergh reaction was weakly positive; the sedimentation-rate was somewhat increased. Owing to the risk of a hæmolytic crisis, no transfusion was given before the splenectomy which was performed on June 15th, 1933. She became very collapsed during the operation, which had to be hurriedly completed and she died seven hours later (Fig. 3). Death was due to hæmorrhage from the spleen pedicle but details of the autopsy are meagre and unfortunately the kidneys were not preserved for section. To the naked eye, however, there were no gross abnormalities, the viscera showing cloudy swelling and the bone-marrow being hyperplastic.

I am indebted to Dr. C. K. Simpson for the following histological report:—

Bone-marrow.—A cellular marrow, but with a considerable quota of fat still evident. Slight irregular erythroblastic hyperplasia throughout the tissue, but with full differentiation, is the only appreciable abnormality. The granular cell series in districts showing erythropoiesis possess a rather higher than normal proportion of the primitive types, but there is no "crowding." The lymphogenic tissue is scanty and in no way abnormal, and there is neither a hyperplasia of the reticular or endothelial cells nor any increase in the pigment content. The number of plasma cells lying in the reticular spaces is abnormally high, but all are fully differentiated.

Spleen.—Presents a very well-marked reticular hyperplasia of diffuse distribution showing early sclerosis by collagen formation, and resulting in partial closure of many of the sinusoidal spaces, and a relative anæmia of the pulp. Severe pressure hypoplasia of the Malpighian tissue is evident and many bodies have disappeared completely. The sinusoidal epithelium shows mild hypertrophy but no hyperplasia and the content of iron-containing pigment is not increased. The cell content of the pulp apart from the general reduction already noted is altered by the presence of a number of megaloblasts and normoblasts with a scattered distribution and a higher than normal content of the primitive granular series. There is no demonstrable erythropoiesis, nor any evidence of excessive erythrolysis.

Liver.—Mild generalised cloudy swelling and central zonal congestion, both of very recent date are present. There are no fatty changes, nor any necrobiosis. Abnormal pigmentation is not evident except in the cells immediately adjoining the dilated intralobular veins. There is no reticulo-endothelial hyperplasia, but mild hypertrophy of the Kupffer cell tissue has occurred. There is no evidence of erythropoiesis, and the cell content of the sinuses is not abnormal. Sections of all tissues stained for the presence of organisms were negative.

The disease appears first to have been recognised as a clinical entity by the Italian school of hæmatologists, especially Marchiafa and Micheli. The literature was reviewed by Rosenthal[19] in 1932, and the addition of the present case and other cases overlooked by Rosenthal or published later[1 5 8 10 13 17 20 24] brings the recorded total to 27, of whom 10 were females and 17 males. I have not included the series of cases from the Mayo Clinic reported by Weir[25] as the details were insufficient. There is no evidence that the disease is inherited, nor on the other hand is there evidence that hæmoglobinuria ever occurs in familial acholuric jaundice. No exciting cause is known and malaria and syphilis have been definitely excluded. The illness usually begins insidiously with gradually increasing anæmia, and it may be years later before the paroxysms of hæmoglobinuria appear. In other instances paroxysms of hæmoglobinuria are the first symptom, and such anæmia as occurs is referable to the hæmoglobinuria and is rapidly repaired; later—and in Rosenthal's case it was as much as 30 years later—the character of the illness changes to a persistent hæmolytic anæmia with occasional exacerbations and hæmoglobinuria. The onset is most commonly in the second or third decade, and though the larval or incomplete forms of the disease may last for many years, the fully developed syndrome of hæmolytic anæmia with paroxysmal hæmoglobinuria usually leads to death in three to five years, from anæmia, intercurrent infection, thrombosis of important vessels, or operative interference.

The paroxysms most commonly begin in the course of the night, and hæmolysis is often more severe in the night than the day, the night urine containing more hæmoglobin than the urine passed during the day, or the night urine containing hæmoglobin when the day urine is free. Hæmoglobinæmia is present at the time of the attacks. Hæmoglobinuria may occur only at long intervals or as frequently as every night; it may last only a few hours or be continuous for weeks or months. Attacks do not occur during sleep in the daytime, nor can their occurrence at night be prevented by feeding or dextrose and insulin. Changes in posture, exertion, cooling, injecting atropine and pilocarpine are alike without effect. Attacks have occasionally but by no means constantly followed transfusion and protein shock. In some patients there appears to be a critical level of the red cells, which may even be as low as one million, and whenever the count rises to that level hæmoglobinuria occurs. Abortive attacks are frequent, and in them the urine may contain a tobacco-yellow deposit, which gives in part the reactions of iron, and consists of granules of altered blood-pigment, either free or incorporated in leucocytes and epithelial cells. This *hæmosiderinuria*, as it is called, is very persistent in some cases, but it is not constant enough to be regarded as a cardinal symptom of the disease.

Apart from the hæmoglobinuria the symptoms are referable to the anæmia which in the later stages at

any rate is persistent and refractory to all treatment and which can only be explained by a continuous hæmolysis. A mild hæmolytic icterus is usually present, but it is often less than might be expected from the degree of anæmia. A few patients have developed a dark bronze pigmentation of the skin. The diet, the tongue, and the gastric secretion are normal, the stools are properly digested and contain no occult blood. The spleen is usually but not always palpable, the liver is occasionally enlarged. Gall-stones may develop as a result of the exaggerated pigment metabolism. The anæmia is macrocytic and hyperchromic but the red cells are rarely so large or so variable in size as in Addison's anæmia. There is a constant reticulocytosis, usually fluctuating between 10 and 20 per cent., but at times reaching much higher figures. Nucleated red cells are relatively infrequent, and there is a moderate leucopenia and thrombocytopenia. The Wassermann and the Donath-Landsteiner reactions are negative, and all efforts to detect abnormal hæmolysins in the blood have failed. The fragility of the red cells is usually normal, and the course of the disease is not influenced by splenectomy. At autopsy the most constant and striking changes are hyperplasia of the bone-marrow and an intense hæmosiderosis of the kidneys, the pigment being deposited in the convoluted tubules and the descending limbs of Henle. Hæmosiderosis is much less evident, and may indeed be within normal limits in the liver, spleen, bone-marrow, and other organs. The spleen shows no characteristic changes and is clearly distinguished by the absence of hæmosiderosis, erythrophagocytosis, and congestion of the pulp from the spleen of acholuric jaundice.

Paroxysmal Hæmoglobinuria with Stengel's Splenomegaly

I have already indicated my belief that hæmoglobinuria never occurs in familial acholuric jaundice, and the great majority of cases of hæmolytic anæmia plus hæmoglobinuria must belong to the group just described (type Marchiafa-Micheli). Nevertheless this group does not include them all. At a symposium on diseases of the spleen at the Royal Society of Medicine in 1933 a case was shown by Rock Carling and colleagues[3] under the title of Gaucher's Disease with Hæmoglobinuria.

The patient, a female aged 34, had been jaundiced since the age of 16, and three or four times each year had had blood crises in which hæmoglobinuria and epigastric pain were the chief symptoms. She had a severe and persistent hyperchromic anæmia with many nucleated red cells. The fragility of the red cells was normal and the Wassermann and the Donath-Landsteiner reactions were negative. There was no family history of any similar disorder. The spleen was removed in 1932. The macroscopic and microscopic appearance of the spleen justified its inclusion in a group of cases which Kettle[11] has differentiated from Gaucher's disease under the title of Stengel's splenomegaly. This condition is characterised by the proliferation of reticulum cells, with the formation of numerous giant cells and ultimately fibrosis, in the spleen, lymph glands, and possibly other organs. None of the previous cases of Stengel's splenomegaly had a hæmolytic anæmia or hæmoglobinuria. Dr. Hildred Carlill has kindly informed me that there were two attacks of hæmoglobinuria after the operation but there has been none since 1932; the patient considers herself better than for many years, and a blood count in May, 1936, showed hæmoglobin 80 per cent., red cells 3,350,000, white cells 12,300, and nucleated red cells 120 per c.mm.

Conclusions

I am afraid the observations in this paper are in a category which Sir Almroth Wright has described as the lowest order of research, the collection of facts, but it is the function of the clinical worker to collect facts. I am afraid also that I have dealt with maladies which are rare and curious, but I have felt that they might throw light on a common disease, blackwater fever, and an important conception, hæmolytic anæmia. It is only by ranging the different varieties of hæmoglobinuria alongside each other that we can separate the symptoms which are common to all forms of hæmoglobinuria from those which are peculiar to the individual examples, nor can it be without value to be familiar with the forms of hæmoglobinuria whose mechanism has been elucidated before trying to solve such a difficult riddle as the nature of blackwater fever.

(*a*) Hæmoglobinuria is usually if not always the result of intravascular hæmolysis and hæmoglobinæmia.

(*b*) Symptoms common to all forms of hæmoglobinæmia and hæmoglobinuria are shock, anæmia, diminution or suppression of urine, and thromboses in various parts of the vascular tree.

(*c*) Recurrent or paroxysmal hæmoglobinuria is not always syphilitic, and the following types can be distinguished:—

1. Hæmoglobinuria e frigore, in which the blood is lysed by exposure to cold either in vivo or in vitro, and which is usually if not always due to syphilis.

2. Hæmoglobinuria from exertion, which is a relatively harmless abnormality occurring in young males. It is probably similar in pathology to postural albuminuria and spontaneously disappears in adult life.

3. Hæmoglobinuria, usually nocturnal, associated with hæmolytic anæmia. This is an intractable disorder of unknown ætiology with a bad prognosis.

4. Paralytic hæmoglobinuria, in which the pigment is derived from the muscles and the attacks of myohæmoglobinuria are associated with weakness and paralysis of the skeletal muscles.

I have arranged the different types in order of frequency. There is reason to believe that other forms of paroxysmal hæmoglobinuria also occur, but such forms as do not belong to one or other of the above four groups must be excessively rare.

I am indebted to Prof. H. Hartridge and Dr. C. K. Simpson for help in the investigation of my cases.

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INFLUENZA INFECTION OF MAN FROM THE FERRET

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Since the isolation of a virus from human cases of influenza (Smith, Andrewes, and Laidlaw, 1933), we have made only two attempts to transmit the virus back again from the ferret to man. Both attempts failed, but the failures were readily explicable on the ground that each of the volunteers had virus-neutralising antibodies in his circulation at the time of test (Andrewes, Laidlaw, and Smith, 1935). Three cases are mentioned in the literature in which influenza was probably contracted from experimental ferrets, but the evidence upon which the presumption is made in each instance is very inconclusive (Laidlaw, 1935; Francis, 1935).

The present report concerns a case of influenza presenting features which make it almost certain that the source of infection was an experimental ferret. Furthermore, an opportunity was afforded of studying the immunological response to virus invasion in man.

MANNER OF INFECTION AND NATURE OF INFECTING VIRUS

During February of this year one of us (S.-H.) was engaged in studying a small localised epidemic in the army personnel at Woolwich. It was thought at the time that the disease might be epidemic influenza. Throat washings were obtained from the most suitable cases and transferred under ideal conditions to Hampstead. Eight samples were tested in ferrets and two of them also in mice. None of these animals showed any sign of illness. The ferrets were tested later with our passage strain of influenza virus; all proved to be fully susceptible to infection. It is clear, therefore, that the epidemic disease at Woolwich was not caused by the strain of influenza virus first isolated in 1933, and since then isolated in Europe, America, and Australia.

On March 6th S.-H. examined eight ferrets housed together in a small isolation cubicle. Six of the animals had been infected three days previously with the passage strain of human influenza virus and were at the height of the disease with pronounced symptoms: nasal obstruction, watery eyes, sneezing, and nasal discharge. It was particularly noted at the time that one ferret sneezed violently at close range whilst being examined.

The passage virus concerned had been transmitted serially through 196 ferrets since its isolation from a human case of influenza. Virus freshly isolated from man has hitherto been non-infective for mice, and has not caused lung lesions in ferrets even when inoculated under anæsthesia, but the long-continued passage of this virus had resulted in a strain which was highly pathogenic for mice and which caused some degree of pulmonary consolidation in ferrets, even when administered to these animals without an anæsthetic.

* Working under tenure of a Sir Henry Royce research fellowship.

CLINICAL HISTORY

Forty-five hours after contact with the sick ferrets S.-H. went down with a typical attack of influenza. The following protocol gives the chief features of the illness.

First day: Very abrupt onset with coryza; sleeplessness and stiffness of joints during the night.

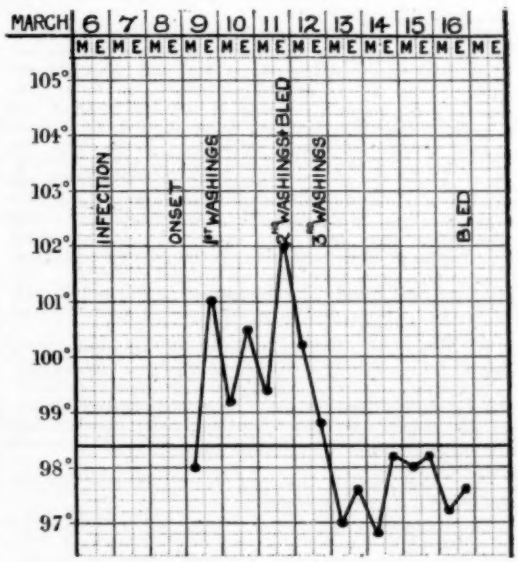
Second day: Malaise, coryza, severe backache and frontal headache, aching pain in nasal cavities, pulse-rate 100.

Third day: Malaise, headache, severe backache in sacral region, aching pains in the hamstrings; sweating, coryza, giddiness on standing.

Fourth day: Disappearance of headache, backache, and coryza. Onset of acute mental depression, pharyngitis, furred tongue. Later in day exacerbation of symptoms, aching in nose, sore-throat, tracheitis with painful cough.

Fifth day: Steady improvement with fall of temperature, giddiness. Rhonchi over both apices.

Fifth to eleventh days: Steady improvement; muscular weakness remained until eleventh day.



Temperature record of a typical attack of influenza after contact with sick ferrets.

The temperature record is shown in the Figure. There is no diphasic character of the temperature curve such as is usual with infected ferrets. The rapid improvement in the patient's condition on the fifth day coincided with the abrupt fall of temperature. There was a corresponding fall of the pulse-rate, and from this point onwards there was a slight degree of bradycardia. Unfortunately no blood counts were made.

RECOVERY OF VIRUS

Throat and nose washings were taken 24 hours after the onset, and again on the fourth and fifth days of the illness. In each instance the washings were ground in a mortar with a little quartz powder to break up shreds of mucus, &c., and then centrifuged. The supernatant fluid was used for the animal tests. Blood was also withdrawn on the fourth day when the patient's temperature was at its maximum, citrated and tested on a ferret.

First washings, 24 hours after onset.—1 c.cm. of supernatant fluid was instilled into the nostrils of a ferret without anæsthetic and 0·05 c.cm. quantities were inoculated intranasally into each of six mice under ether anæsthesia. The ferret responded with a typical attack of ferret influenza (Smith, Andrewes, and Laidlaw, 1933) and was killed on the third day following infection. At post-mortem the turbinates were hæmorrhagic and mucopurulent, and the lungs showed two foci of consolidation, each about half a centimetre in diameter, one in the left lung and the other in the right middle lobe. It should be emphasised that we have never previously encountered pulmonary involvement in ferrets inoculated directly with human material. Serial passages in ferrets under anæsthesia have been necessary before any of our virus strains have acquired pneumotropic properties, and this has also been the experience of other workers (Francis, 1934).

Both turbinates and portions of consolidated lung were used for passage to other ferrets and for histological examination. In each case the disease was readily transmitted. Histologically both the turbinates and lungs showed the picture characteristic of ferret influenza. The passage ferrets were allowed to recover and then tested for immunity to the WS passage virus. Both were found to be solidly immune.

The six mice which received the patient's washings all showed symptoms on the third day after inoculation. They were killed on the fourth day, and in every case showed lung lesions indistinguishable from those produced by our passage strain of virus. The lungs of two mice were fixed for sections; these showed the characteristic changes of mouse influenza. Lungs from the other four mice were pooled and used to test the filterability of the virus. A bacteriologically sterile filtrate through a gradocol membrane with average pore diameter 0·78μ was used to inoculate 12 mice. The animals were killed four days later and showed typical influenzal lung lesions in every case. Subsequent passage and filtration of the virus were effected without difficulty. The virus behaved exactly like the passage strain, and filtrates of the two strains proved equally potent when titrated on groups of mice.

Second washings and blood, fourth day of illness.—It is sufficient to record that the second washings proved fully as infective as the first sample for both ferrets and mice. Here again the ferret showed lung involvement at autopsy on the fourth day after infection, small lesions being present in three lobes. All the mice inoculated showed extensive lung lesions.

The blood sample however proved non-infective for the ferret; it was not tested in mice.

Third washings, fifth day of illness.—These were tested in a ferret but not in mice; they were found to be non-infective. The animal used was shown later to be fully susceptible to passage virus.

ANTIBODY RESPONSE OF PATIENT TO INVASION BY VIRUS

Fortunately samples of the patient's serum, obtained a few months before his illness, were available. Further samples were obtained on the third, eighth, sixteenth, thirty-first, forty-fourth, and eighty-first days after the onset of symptoms and titrated by the mouse protection test. The technique of antibody titration used was identical with that described by Laidlaw et al. (1935).

Briefly the method consists in the intranasal inoculation of groups of three mice with mixtures of a virus filtrate, prepared from infected mouse lungs, and various dilutions of the sera to be tested. A stock antiserum prepared in a horse is included in every experiment as a standard of reference; this is essential if the results of different experiments are to be compared, because virus filtrates vary in potency although prepared as nearly as possible in the same way. The serum potencies are estimated by a comparison of the numbers of deaths occurring in the various groups during the course of the experiment and the extent of lung involvement in surviving mice when these are killed on the fourth to sixth day after inoculation.

The Table summarises six experiments of this nature. The virus used in experiment 1 was the strain (S.-H.) recovered from the patient, that in experiment 2 was swine influenza virus (Shope, 1931, 1932), whilst in the other experiments a filtrate or a diluted filtrate of the passage strain of human influenza virus was employed.

The results show that S.-H. possessed no demonstrable neutralising antibodies against human strain virus at the time of infection. Following the illness there was a steady rise of antibodies. It is possible that they began to appear as early as the third day when the nasopharynx still contained virus, for in experiment 1 the three mice which received virus together with a 1 in 2 dilution of this serum all showed very much smaller lung lesions than the mice which received the same dose of preliminary bleeding serum. This result however was not repeated in the later titrations and may perhaps have been fortuitous. The antibody peak is shown by the third and fourth serum samples taken 16 and 31 days after the onset of symptoms; possibly an intermediate bleeding might have shown a still higher level. There is no doubt that a decline of circulating antibodies had set in by the forty-fourth day, but experiments 5 and 6 suggest that this decline is very gradual, for the serum taken on the eighty-first day is only just appreciably weaker than that of the forty-fourth day.

Experiment 2 shows that S.-H. had antibodies against the swine strain of virus prior to his illness. It is not surprising that these were of no avail in preventing his infection in view of the total failure of the standard swine strain serum IH4 to prevent mouse infection with the strain of virus recovered (expt. 1). We know, however, that the swine and human strains have an antigenic factor in common; this probably accounts for the increase of antibodies against swine virus during convalescence, the increase occurring pari passu with that of the homologous antibodies.

EVIDENCE THAT INFECTION WAS CAUGHT FROM FERRET

Although the patient was engaged about the time of infection in collecting material from cases diagnosed as influenza, the later clinical and bacteriological investigations led to the conclusion that the epidemic disease was not influenza. The animal tests of the samples collected fully confirmed this conclusion. Moreover influenza, as judged by our experimental evidence, was apparently not prevalent in London in the spring of 1936. S.-H. had not had any contact with influenza ferrets for some weeks before the occasion recorded above, which therefore marked with certainty the exact time of infection. The incubation period of approximately 48 hours is also the usual incubation period in ferrets experimentally inoculated with passage virus without anæsthetic.

The virus recovered from S.-H. behaved in all respects like the passage strain and was quite unlike any other human influenza virus isolated by us or, so far as we know, by workers in other countries. It showed the pneumotropic property only acquired by the passage strain after serial transmission through ferrets under ether anæsthesia.

The patient's nasopharyngeal washings readily infected mice, producing at the outset in all the animals inoculated extensive lung lesions. The adaptation of previous strains to mice was a gradual process involving a number of passages through ferrets followed by the selection of those mice showing small lung lesions, from a group inoculated, for further mouse passage.

TITRATION IN MICE OF VARIOUS SAMPLES OF PATIENT'S SERUM

Expt. No.	Virus filtrate.	Serum.	Serum dilutions.											
			1/2			1/10			1/50			1/250		
1	S-H strain (recovered from patient).	IH2	..	..	..	o	o	o	o	o	o	±	o	o
		Preinfec.	++++	+++	++	+++	+++	++	++++	+++	+++	..	..	..
		3rd day.	+	+	+	++++	+++	o	++++	+++	+++	..	..	..
		8th „	o	o	o	o	o	o	+	±	o	+++	+++	++
		16th „	o	o	o	o	o	o	o	o	o	+++	++	++
		IH4	++++	+++	++	++++	+++	++	++++	++++	++	..	..	..
2	Swine strain.	IH4	..	..	..	o	o	o	++	+	o	++	++	+
		Preinfec.	±	o	o	+	o	o	++	+	+	..	..	..
		3rd day.	•	o	o	•	±	o	++	++	+	..	..	..
		8th „	o	o	o	o	o	o	•	++	+	++	+	o
		16th „	o	o	o	o	o	o	o	o	o	++	++	o
3	WS strain (passage virus).	IH2	..	..	..	o	o	o	+++	++	++	D	D	D
		Preinfec.	D	D	D	D	D	D	D	D	++	..	..	..
		3rd day.	D	D	+++	D	D	+++	D	D	D	..	..	..
		16th „	..	..	..	++	+	o	D	D	+++	D	D	D
		31st „	..	..	..	++	+	o	D	D	D	D	D	D
		44th „	..	..	..	+++	++	++	D	D	D	D	D	+
4	WS strain, 1 in 10 dilution.	IH2	..	..	..	o	o	o	o	o	o	++	+	+
		Preinfec.	++	++	+	+++	+++	++	D	+++	++	..	..	..
		3rd day.	++	++	+	+++	++	++	D	D	D	..	..	..
		16th „	..	..	..	o	o	o	+	+	±	++	+	±
		31st „	..	..	..	o	o	o	+	+	+	+++	++	+
		44th „	..	..	..	±	o	o	+++	+	+	+++	+++	++
5	WS strain, 1 in 10 dilution.	IH2	..	..	..	o	o	o	+++	o	o	++	o	o
		44th day.	..	..	..	o	o	o	o	o	o	++	+	o
		81st „	..	..	..	o	o	o	+	o	o	++	+	+
6	WS strain, 1 in 10 dilution.	IH2	..	..	..	o	o	o	o	o	o	+	o	o
		44th day.	..	..	..	o	o	o	+	+	++	++	++	++
		81st „	..	..	..	+	o	o	D	o	o	+++	+++	++

D = Mouse died with almost complete consolidation of lungs.
++++ to ± indicate diminishing degrees of lung involvement.
o = Normal lungs. • = Non-specific death.

Lastly, the virus isolated appears to be antigenically identical with the passage strain.

DISCUSSION

The fact that animal passage strains of influenza virus may retain their infectivity for man is of some practical importance. Hitherto we have made no attempt to immunise laboratory workers exposed to such infection, but it is considered that the time may have arrived when this should be done in the case of those who possess no demonstrable virus neutralising antibodies. It is quite conceivable that a case of laboratory infection might be the starting-point of an epidemic. There is some reason now to believe that immunisation of man would confer considerable resistance against infection, for not only have mice been protected in this way against thousands of infective doses of virus, but also Francis and Magill (1936) have shown recently that virus neutralising antibodies appear in quantity in the sera of men following subcutaneous inoculation of living influenza culture virus. The living virus inoculated by the subcutaneous route appears to be quite harmless.

Early work with ferrets led to some doubt as to the importance of serum antibodies in the prevention of infection, but the evidence accumulated by American and British workers during the last two years suggests that they are intimately connected with susceptibility and resistance. It is somewhat surprising that, following a fairly severe attack of influenza, the patient's antibody titre never rose to a point greater than about one-fifth that of the standard horse serum, whereas some adult human sera from donors giving no history of recent influenza have been shown to be more potent than the standard (Andrewes, Laidlaw, and Smith, 1935). However, a considerable variation in immunological response has been frequently encountered in experimental animals. The possession of antibodies against swine strain virus is usual in adults, and the significance of this has been discussed in previous communications. The coincident rise of swine strain antibodies with the appearance of human strain antibodies encourages the hope that artificial immunisation with one strain may not be entirely without effect upon the resistance of the subject to heterologous virus strains if and when these make their appearance.

It is of interest that S.-H. had contact with infected mice and worked with mouse virus for many months without acquiring infection. The disease in this species does not pass by simple contact and the animals show no symptoms of nasopharyngeal involvement, such as sneezing and nasal discharge. The possibility remains however that whereas the ferret virus has retained its infectivity for man, the mouse strain may have lost it entirely.

SUMMARY

1. A case of influenza is described, and the evidence that the infection was contracted from the ferret is presented.

2. The immunological response of the patient to the virus infection has been studied.

3. The practical significance of the results is discussed.

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INTESTINAL STRICTURE AND ITS ASSOCIATION WITH PERNICIOUS ANÆMIA

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In 1895 Faber[1] described a case in which pernicious anæmia was associated with strictures of the small intestine, and pointed out the pathogenic connexion between the two conditions. Since then similar cases have been recorded, so that in 1929, one of us (E. M.) was able to collect 21 cases,[2] including 5 personally observed. In this article he summarises these, and includes, as a twenty-second case, one in which the place of strictures was taken by a foreign body. In the majority the strictures were of tuberculous origin, but seem to have been the only site where there was obvious infection, judging by post-mortem reports. Gluzinski[3] regarded the strictures as resulting from a primary tuberculous infection with strong healing tendencies. As only one recorded case had evidence of active tuberculosis at autopsy, the causation of the anæmia may be looked for in changes activated by the presence of the strictures. Since 1929, 3 further cases have been recorded, one of which is of particular interest in that it was possible to demonstrate the presence of the anti-pernicious anæmia factor in the gastric juice, which also contained free hydrochloric acid. We have recently studied a patient who suffered from stricture anæmia.

CASE REPORT

A woman, aged 49, was admitted to Bispebjerg Hospital on Sept. 29th, 1935. In 1907 she had syphilis, treated at the time. In 1925 she was treated in Bispebjerg Hospital for neurasthenia and dyspepsia, abdominal pain, and vomiting for one month. A test-meal showed normal hydrochloric acid secretion; opaque meal normal. In 1932 she had a left-sided pleurisy.

June 8th, 1934: Admitted with pulmonary tuberculosis and old syphilis. She had diarrhœa with 5–6 loose stools daily and had lost 10 kilos in weight. Clinical and X ray examination revealed tuberculosis of left lung, with fibrosis and cavitation. Test-meal now showed achlorhydria. Blood:

Hæmoglobin	66%	Colour-index ..	1·26
(100% = 18·5% O_2)		Wassermann reaction ..	Positive.
Red cells ..	2,610,000		

Antisyphilitic treatment instituted. Stools reduced to 1 per diem whilst in hospital.

Feb. 16th, 1935: Anæmia, pulmonary tuberculosis, enterocolitis, and achlorhydria. Loose stools, abdominal pain with vomiting. Examination: Lungs as before; abdomen distended. Achlorhydria. Radiograms: Opaque meal, 8 hours' retention in ileum, suggesting stricture of ileum; 9th dorsal vertebra osteosclerotic. Blood:

Hæmoglobin	63%	Megalocytes (Gram's method)	9%
Red cells ..	3,115,000		

2–3 loose stools daily. Flatus. March 27th: Discharged on Ventriculin Mco 20 grammes daily.

June 22nd: Readmitted. Severe abdominal pain the previous day, distension and vomiting, which disappeared spontaneously with much flatus. Examination: Distension, tympanism, visible intestinal peristalsis. Blood:

Hæmoglobin	63%	White cells	3,300
Red cells ..	3,605,000	Icteric index (Meulengracht) ..	< 5

Intermittent ileus continued.

Operation.—Multiple strictures in lower 2–3 metres of ileum at intervals of 10–15 cm. No glandular enlargement, no active tuberculosis noted in abdomen. Short-circuiting operation performed. Discharged July 11th.

Sept. 21st: Readmitted. Condition bad; she had neglected to take ventriculin and liver. Very anæmic; tongue smooth, no papillæ. Chest as before. Abdomen distended, peristalsis visible. W.R. positive. Stools frequent, soft, and bulky with increased fat content. Blood:

Hæmoglobin ..	45%	Megalocytes (Gram's method)	22%
Red cells ..	1,955,000	Mean corpuscular volume	127 cu. μ
White cells ..	1,500	Hæmoglobin content of cells	42??
Normoblasts per 100 W.B.C. ..	1%	Price-Jones curve (Dr. Skelton) mean diameter 8·0225 μ, σ = 1·00, ν = 12·414%	
Icteric index (Meulengracht) ..	< 5	Megalocytes	28·2%

Analysis of stool: 51·3 per cent. fat in dried fæces; chiefly split fat (47·1 per cent.).

Marrow puncture (Dr. Rothe Meyer): Megaloblastic reaction.

Radiography: Evidence of increased peristalsis in stomach and duodenum; delay in small intestine, particularly ileum.

Oct. 15th: Treatment with Pylorin 20 grammes, and Mco liver (two phials) daily. Small reticulocyte response,

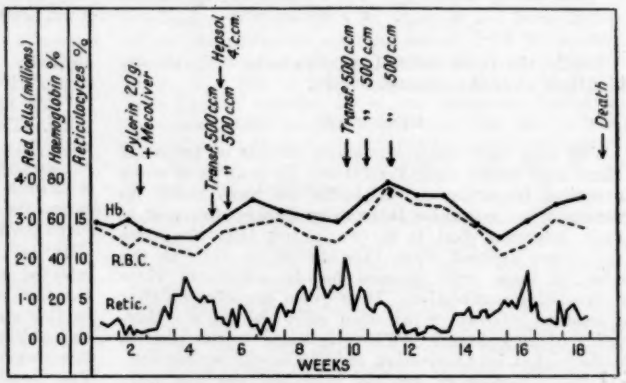

FIG. 1.—The blood: the effects of treatment.

no improvement noted in blood. Condition deteriorated, patient transfused several times with temporary improvement. Parenteral liver therapy produced a small reticulocytosis but no improvement. Treatment apart from transfusion apparently ineffective (Fig. 1). Slight, irregular fever occurred from admission, with occasional accentuation. Pulmonary tuberculosis spread. Weight remained fairly constant. Transfusions discontinued after Dec. 8th. On Jan. 1st, 1936, a gain in weight was associated with slight generalised œdema, and there was a small rise in the blood count. On Feb. 2nd a pleural effusion on the left side was located. In spite of cough there was no sputum; tubercle bacilli were found in the stools. She died on Feb. 9th.

Autopsy report.—Body of a pale, wasted woman.

Thorax: Left pleural cavity contained 1·25 litres of serous fluid; right pleural cavity obliterated; left lung atelectatic, fibrous from old tuberculosis and cavitated; right lung, upper and middle lobes show cavities the size of chestnut, surrounded by fibrosed and pigmented areas; caseous areas surrounding bronchi; some miliary tubercles in lower lobe; hilar glands of both sides calcified; heart pale, no organic lesions.

Abdomen: Slight ascites. Stomach macroscopically normal. Small intestine, short-circuiting of about 1 metre of lower jejunum and upper ileum; the loop thus short-circuited presents about ten strictures approximately 10 cm. apart; peritoneum over strictures is crenelated; small tubercle-like nodules present. Intestine contains voluminous yellow-grey fæces. Strictures are circular, 2–4 cm.

FIG. 2.—Two of the strictures in the small intestine.

broad, sharply demarcated; they are infiltrated, and the wall of the intestine at the strictures is 0·5 cm. thick (Fig. 2). Recent ulceration in region of strictures. Mass of partly caseous glands at root of mesentery. Large intestine normal. Liver pale, not enlarged; spleen not enlarged, pulp soft; kidneys pale, not diseased. Bone-marrow (vertebra) red, moist.

COMMENTS

This patient's story resembles that of many previous cases, but certain features call for further comment. She had had syphilis and still possessed an obstinately positive Wassermann reaction. Box and Gill [4] recently recorded a case of severe syphilitic anæmia resembling pernicious anæmia, in which stomach extract produced no response, but cure was obtained by antisyphilitic treatment alone. They stress the great rarity of this form of syphilitic anæmia. In the case here recorded, a full course of treatment for syphilis failed to influence the blood, at a time when she had developed pernicious anæmia. Unlike the majority of cases of stricture anæmia the intestinal tuberculosis was associated with active pulmonary infection, though the long period during which the strictures were present and the absence of evidence of active disease at operation indicate that healing took place and the strictures were produced some years before death. At autopsy, fresh tuberculous ulceration was present in the ileum. It is possible, as in Seyderhelm's [5] case, for the resection of the stricture to result in disappearance of the anæmia; this does not usually happen. In some other cases liver and liver extract by mouth have effected a cure. The high fat content and bulkiness of the stools in the case now recorded are phenomena which have been noted before, and recall the additional fact that persisting steatorrhœa may be associated with megalocytic anæmia, which can be cured with methods employed in the treatment of pernicious anæmia.

The course of events in this symptom-complex would seem to be as follows. There is a tuberculous enteritis, followed by healing and the production of strictures. The strictures may produce disturbance of gastro-intestinal function in two ways—by impairment of intestinal absorption, or by progressive gastritis, atrophy, and failure of the stomach to secrete the intrinsic factor. If the strictures are resected or short-circuited in time, recovery of gastric and intestinal function follows, providing too great a length of gut is not sacrificed. If operation fails to cure the anæmia, treatment with liver or stomach preparations will effect a cure, except in cases where intestinal absorption has been interfered with: even then parenteral liver therapy should cure the anæmia unless there is advanced coexisting disease, such as the pulmonary tubercle in the case which we record here. The persistence of the anti-anæmic principle in the gastric juice of Schlesinger's case [6] shows that it is possible for the absorptive power of the intestine alone to be at fault, and it must be noted that in this case, in Narbeshuber's,[7] and in an analogous one of obstruction and entero-enterostomy recorded by Little, Zerfas, and Trusler [8] free hydrochloric acid was found. In all the other cases where it was looked for, and where we have been able to refer to the findings (18 cases), achlorhydria has been present. The resemblance of some cases to the megalocytic anæmia of steatorrhœa, makes it probable that in both diseases a similar failure of intestinal or gastro-intestinal function is present. It is likely that in the majority of cases of stricture anæmia the anæmia depends upon a balance of two factors that vary from case to case, one factor being the absence of gastric secretion, and the other a reduced power of intestinal absorption; in a few it may be possible to claim that one factor alone is at work. Strictures from other causes and partial obstruction lasting over a long period of time may occasionally produce the symptom-complex discussed above, whilst it is known that resection of extensive lengths of small intestine may result in the development of pernicious anæmia. When the absorptive mechanism is at fault, the giving of large amounts of liver or stomach extract by mouth will sometimes make up for this deficiency; if they fail, parenteral administration is indicated. It should finally be noted that intestinal stricture may be occasionally followed by microcytic anæmia; one such case, which later came to autopsy, had a blood count of: red cells, 3,500,000; Hb., 55 per cent.; white cells, 7100; colour-index, 0·79.

The paper (E. M.) already mentioned summarised the recorded cases of this condition up to the year 1929; we have made reference to three case reports since that date. Scherer [9] described one in 1930, and one was recorded by Narbeshuber in 1931, in which free hydrochloric acid was found in the gastric juice. Schlesinger's case, recorded in 1933, had not only free hydrochloric acid in the gastric juice, but also Castle's intrinsic factor, indicating that the anæmia was due to faulty absorption rather than insufficient production of the anti-pernicious anæmia principle.

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NEW INFIRMARY AT BOSTON, LINCS.—Plans for a proposed New Holland Infirmary to be erected at Boston at an estimated cost of £75,000 are to be submitted to the Holland county council by its public health and public assistance committee. The scheme provides for 120 beds to accommodate patients at present cared for at the public assistance infirmaries at Boston, Spalding, and Holbeach. In addition there will probably be room for private patients.

TECHNIQUE OF SPLEEN PUNCTURE

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Puncture of the spleen through the abdominal wall with a hypodermic needle in order to obtain a sample of blood from that organ, for diagnostic or other purposes, is a procedure not generally favoured by medical authorities. The value of the information obtained is not considered commensurate with the dangers of the operation.

As a rapid and certain method of diagnosis in kala-azar spleen puncture is unrivalled; it is the method by which the accuracy of all other diagnostic methods used in this disease are finally judged.

In the investigation of the pathological processes in blood and other diseases in which splenic enlargement is a prominent symptom, the possibilities of spleen puncture have not been fully explored. By means of sternum puncture some information as to the state of the blood-forming organs can be obtained; by examination of the peripheral blood the state of the blood as a working unit in the organism can be judged; and it seems certain that useful information regarding the processes of blood-cell destruction might be obtained from the blood taken directly from the sinusoidal spaces in the spleen.

It is not proposed here to discuss further the possibilities of spleen puncture as a diagnostic method in other parasitic or bacterial diseases, or as a means of investigating the ætiology of blood diseases, nor to make any reference to my previous observations [1 2] in this connexion, but rather to describe the technique that I have adopted during fifteen years' continuous experience of the operation, and to discuss the risks of the method.

References to spleen puncture are few and usually consist of a bare mention of the method as being employed but as not being free from risk; other writers go further and suggest that it is an unjustifiable procedure. Whilst all emphasise its dangers, none suggests that these dangers may be obviated or even mitigated in any way by the adoption of a standardised technique—beyond an occasional warning that the strictest asepsis should be observed; but, as the operation necessitates passage of the needle through the peritoneal cavity, this precaution is so fundamental that reference to it might almost be omitted—yet, in discussing the risk of any operative procedure, the greatest emphasis is usually laid on the technique. Writers presumably adopt the attitude either that the procedure is so simple that anyone can work out his own technique—if such a grandiose word is applicable—or that there is no right way of doing something that is fundamentally wrong.

Books on clinical methods often fail to mention spleen puncture, and books on tropical medicine are seldom any more explicit than those on general medicine. Stitt [3] suggests that the operation is dangerous, and refers to the death-rate following it as approximately 1 per cent. Manson-Bahr [4] and Rogers and Megaw [5] both give some details of the technique, but with those given by the former I am not in entire agreement, and the latter's description is very brief.

PERSONAL EXPERIENCE

In a period of a little over 15 years I have done spleen puncture well over 5000 times. Although accurate records of all these have not been kept, the claim is not an irresponsible one. During practically the whole of this period I have been in charge of the kala-azar cases, both hospital and outdoor, at the Calcutta School of Tropical Medicine. The number of kala-azar patients treated in the hospital during those year that I was in charge of the department was 2230, and the number in the out-patient department 7387 (see annual reports of the School). Spleen puncture has been done on 90 per cent. of the in-patients, at least once during their stay in hospital; during the first half of the period it was done as a routine procedure on admission and again before discharge, and in some cases at frequent intervals during the course of treatment. It has also been done in probably an equally large number of cases that simulated kala-azar clinically; these of course are not included in the above figure. In the out-patient department spleen puncture was done as a routine measure in the early days before the introduction of the aldehyde test, and for some time after its introduction, in order to test its accuracy; for example, a series of 239 cases in which both the spleen puncture and aldehyde test were done, during a period of eight months, was reported [1] by me in 1923. More recently, it has only been done in doubtful cases. I have only on very rare occasions deputed this work to an assistant.

More than half these spleen punctures have been done in patients who have subsequently been under observation for some days at least. In not a single case has any patient who has remained under observation suffered any ill-effects, beyond slight tenderness over the splenic area; nor have we received any reports of deaths or serious sequelæ that could be attributed to the operation in those that went to their homes shortly after the operation. In about 1 per cent. of cases there has been marked tenderness lasting a few days, suggesting, when the site of the pain seemed to be deep in the spleen, that there had been a hæmatoma in the spleen substance or under the capsule, or that there had been a little oozing from the puncture in the capsule with the formation of a clot between the two peritoneal surfaces. We have not been able to demonstrate either of these processes in the post-mortem room, but in one case, where death occurred suddenly about 24 hours after spleen puncture (sudden death is not a very rare occurrence in kala-azar), we were able to do a limited post-mortem examination and obtained an intact spleen but found about a pint of slightly blood-stained fluid in the peritoneal cavity; there had evidently been a little oozing in this case, but the fluid was mainly ascitic.

Though I have had no fatalities attributable to this operation in my own cases, I have seen death follow a spleen puncture in which the operator kept the needle in the spleen for half a minute or more and repeatedly withdrew the plunger until his syringe was almost full.

TECHNIQUE

I standardised my technique early in my experience and have not found it necessary to modify it subsequently. It was probably adopted from my senior colleagues, especially Dr. E. Muir and Colonel F. P. Mackie; the only serious claim to originality that I can make is the introduction of the special spleen-puncture syringe described below. There are certain details in the procedure, such as the giving of calcium lactate with the avowed object of increasing the coagulability of the blood, that might be omitted, others which though they may sound trivial, I think

are of importance, but in view of my continued success with the operation and of the reported ill-success of others I felt that it was better to adhere rigidly to my original procedure.

Preparation and after-treatment.—This has necessarily to be modified in the case of out-patients. For hospital patients we give grs. 30 of calcium lactate the night before; we repeat the dose in the morning and give a third dose immediately after the puncture. The patient is kept in bed for the whole day; he is given a cup of tea at 6 A.M. but no food subsequently until an hour after the operation; this is usually done between 10 and 11 A.M. Out-patients are given a dose of calcium lactate immediately spleen puncture is decided upon and are usually kept until 1 P.M., to ensure that they have had no food for some hours; they are then given a second dose after the spleen puncture, and made to lie still for an hour or more until the slide has been examined; they are then seen, and if there is no contra-indication they are allowed to go home.

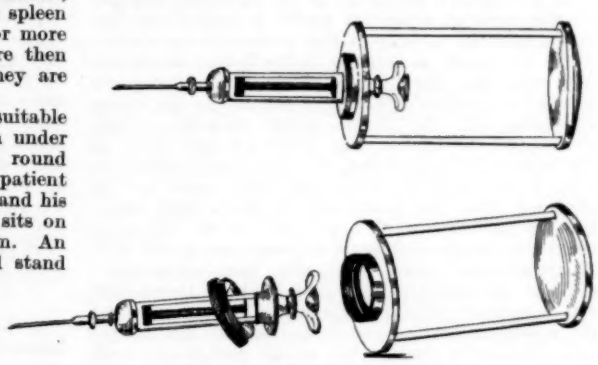
The splenic area is cleaned up with some suitable antiseptic, and a binder is placed in position under the patient's back and is bound tightly round the abdomen after the operation. The patient lies flat on the bed, with the pillows removed and his hands placed under his head; the operator sits on the bed on the left of the patient, facing him. An assistant is unnecessary, but a nurse should stand at the head of the bed ready to intercept the patient's hands should he move them; it is better not to hold his hands as the procedure may alarm him.

The syringe and needle.—I have used my own spleen-puncture syringe for about 14 years now and would hesitate to undertake a spleen puncture without it. The feature of the syringe is that it can be operated with one hand; this leaves the other hand free to locate and to fix the spleen, whereas normally one hand is required to hold the syringe and the other to withdraw the plunger. It is not just a matter of saving an assistant, because in the case of a spleen that just reaches below the costal margin only the operator can locate it sufficiently exactly to allow a puncture to be done safely. In this way the spleen of a wriggling child can be gripped and fixed, and the child allowed to rotate around it, so to speak, while the operation is being performed.

The syringe is illustrated in the Figure. It has a long handle, or grip, attached to the barrel of the syringe; this lies in the palm of the hand, whilst the first and second fingers are passed under the top of the plunger and withdraw it; if necessary (it should not be), the plunger can be pressed in again with the thumb. I use an ordinary 5 c.cm. Roux syringe to which the special handle is easily attached by means of a collar that screws into the handle and holds the flange of the barrel of the syringe firmly. An all-glass syringe can also be used, but this particular fitting will not take a Record syringe. The needle should be moderately stout and about 1½ in. in length—a No. 11 is the one usually used. It must be sharp and bright.

If an all-glass syringe is used it may be dry-sterilised, but a Roux syringe is, on the whole, more satisfactory, and is best sterilised by drawing hot vaseline (160° C.) in and out of it two or three times. All the vaseline should be squirted out, otherwise it may block the needle or mix with the blood when this is expelled on to the slide; this is not a serious complication for an ordinary blood smear but it is liable to spoil a supravital-stained preparation. The syringe should be allowed to cool, but not get cold, and great care should be taken that the plunger is running easily.

The operation.—The point chosen is half in inch below the costal margin on the long axis of the outer (parietal) surface of the spleen. If the spleen is small it may be necessary to go even closer to the costal margin, but it is as well to give as much space as possible as very acute pain is caused if a rib is scratched by the needle. On the other hand, if the spleen is very large, it is unnecessary to go so near to the ribs. The object of choosing this point is to ensure puncturing at the thickest part of the spleen. I never puncture the spleen unless it is palpable below the costal margin. When the exact spot has been selected it should be touched with a match that has been dipped into pure carbolic acid. This serves a fourfold object; it marks the spot so that the operator can take his eye off it and see that his syringe is working properly, or even move away and sterilise it; it has a slight anæsthetic effect; it is antiseptic; and, finally, it leaves a permanent tell-tale mark that has on a number of occasions saved a second spleen puncture in a patient who has come up again as a new case. We do not use carbolic for young children as the burning sensation frightens them. Immediately before the puncture the spot is swabbed with spirit to remove any excess of carbolic that might get on to the needle and thence into the culture medium.



The spleen-puncture syringe.

The operator, sitting on the left side of the patient, puts his left hand below the spleen, if it is a large one, to prevent any downward movement, or, if it is of moderate size, he places his hand on the abdomen so that the protruding triangular portion of the spleen fits into the angle between his first finger and thumb, in this way the spleen is immobilised and exactly located.

The puncture is done in two movements. By the first only the skin is punctured; this is done by holding the needle at a very acute angle, almost parallel with the skin surface. If the skin is tough it may be difficult to control the extent to which the needle goes in, but if the angle is sufficiently acute the point of the needle will not penetrate beyond the subcutaneous tissue.

The skin puncture may be done in any direction that is convenient; the needle is then withdrawn until only about an eighth of an inch is still through the skin, and then the syringe is rotated into position for the second stage of the puncture. Here the direction of the puncture is very important; the needle should form an angle of about 45° with the skin surface, and should point upwards and slightly outwards along the line of the long axis of the spleen. The needle is then plunged through the soft tissues of the abdominal wall and into the spleen substance. Perfect control over the needle is possible at this stage as only soft tissues are being punctured; the depth to which the needle is pushed in will depend on the thickness of the abdominal wall, but the object should be to penetrate the spleen substance for about half an inch; the plunger should be withdrawn and released three or four times very rapidly and the needle immediately withdrawn altogether. If the plunger is running easily and is airtight (this can be tested beforehand by thrusting the point of the needle into a rubber cork) the plunger will immediately spring back into its original position directly it is released—unless of course the syringe fills with blood, as happens occasionally—and the three

or four withdrawals of the plunger should be done within a fraction of a second. It is important that the plunger should be released before the syringe is withdrawn finally, as, if this is not done, when the drop of blood in the needle comes under the influence of atmospheric pressure, it will be driven into the body of the syringe and may be recovered only with difficulty.

It is quite unnecessary, and in fact dangerous, to continue to withdraw the plunger until blood appears in the barrel of the syringe. Only a small drop of blood is necessary, and this will always be found in the needle if the plunger is withdrawn rapidly once or twice. This should be squirted out on to a slide, without touching the slide with the point of the needle; the needle and syringe can then be washed out with a small quantity of sterile saline and the washings used for cultural purposes, if it is thought necessary.

In my opinion the safety of the operation depends on the angle at which the needle is pushed into the spleen and the rapidity of that part of the procedure while the needle is actually in the spleen substance. The angle and direction are chosen in the first place to ensure that the needle point remains in the spleen substance; if the needle passes through a thin portion of the spleen, two punctures are made in the capsule instead of one, the needle may penetrate some other organ or vessel, and little result will be obtained from the puncture; in the second place, because the downward movement of the spleen is controlled by the left hand and any movement that occurs must be upwards—i.e., away from the needle—so that the only result would be that the needle was withdrawn slightly, whereas if it were piercing the spleen at right angles to the surface any movement would be against the needle and might lead to the tearing of the capsule and the spleen tissue.

The patient is not told to hold his breath, but the needle is plunged in at the end of an inspiration; there is a natural tendency on the part of the patient to hold his breath, but in any case he can only expire and the needle should be withdrawn long before he has time to take another breath. Patients are not all very intelligent, and if you once interfere with their normal breathing they are liable to do many unexpected things. The first stage of the puncture can be done slowly and deliberately; it is only the second stage that should be done rapidly, and it is here that experience is of value.

The *spleen-puncture material* is blood from a large venous sinus, from a small sinus, or from the sinusoidal spaces. There will also be tissue cells that normally are fixed, but which have been dislodged by the passage of the needle through the spleen tissue. Whatever blood is obtained, it differs from peripheral blood, and, even in cases where the syringe fills immediately from a large sinus, there are always more white cells, mostly of the endothelial type, and in cases of kala-azar parasites are usually easy to find (contrary to statements in the text-books).

It is not at all clear what is meant exactly by the expression "spleen pulp" (I admit that I have used it myself in the past). Some writers emphasise the necessity of obtaining this pulp, and one has described an elaborate procedure with electric torches and dark rooms to see whether he has obtained the requisite amount of pulp. If he has not, presumably he goes back and does another spleen puncture.

I was at one time under the impression that now and then there were some solid particles in the blood expressed from the syringe, and, from the fact that there did not appear to be any solid tissue in the stained films, I assumed that this substance was broken up during the process of making a smear. However, some years ago I stained by a supravital process a number of specimens obtained by spleen puncture and found that in every case the film under the coverslip spread as evenly as any drop of blood. Since then I have been on the look-out for these granules of pulp that are described but have not seen them. It is of course possible that if you rake about in the spleen, as some operators do, you may dislodge some solid pieces of spleen parenchyma, but it is neither necessary nor desirable to remove macroscopic portions of the spleen.

I have seen these granules simulated by blood that has clotted in the needle, by coagulated blood from a trace of alcohol left in the needle, and by a particle of solid paraffin, when it has been used for sterilising the syringe.

In investigating blood diseases the spleen-puncture findings have to be accepted with reserve, as much depends on the exact portion of spleen substance that the needle happens to strike. If the point penetrates into a Malpighian corpuscle nearly all the cells will be lymphocytes, whereas another puncture in the same spleen may show practically no lymphocytes. Quite frequently we have found large numbers of megaloblasts and erythroblasts in cases in which there were few in the peripheral blood; this suggests an extramedullary erythropoietic focus; however, a failure to find this in another patient does not mean that the same state of affairs does not exist, but only that the needle has not happened to reach one of these areas.

PRECAUTIONS AND CONTRA-INDICATIONS

It is worth while investigating the coagulation time and examining a blood smear to exclude myelogenic leukæmia and other conditions in which the coagulation time is much delayed. I did not do this as a routine procedure. On three occasions in the out-patient department I have done spleen puncture in cases of myelogenic leukæmia in which blood films had not been previously examined, without any adverse symptoms following, but in deference to the strong opinion against the operation in these cases, I have not done it when the diagnosis was clear.

Jaundice, ascites, and bronchitis are given in text-books as contra-indications, but I have not hesitated to do spleen puncture in these cases; ascites certainly adds very much to the difficulty of doing the operation, and it may be advisable to perform paracentesis first. The main difficulty is that the ascitic fluid is liable to get into the syringe and dilute the blood. With reference to bronchitis, if the operation is done rapidly the patient has no time to cough. Manson-Bahr advises a local anæsthetic, but there is nothing beyond a psychological effect to be gained by this; a general anæsthetic is of course unnecessary; I have never used either.

DISCUSSION

I have been encouraged to put these notes together because I feel that spleen puncture is quite wrongly considered to be a dangerous procedure. Though my experience may not perhaps have been unique, it has at least been unusually extensive, and I am driven to the conclusion either that spleen puncture is a safe operation or that the technique I use has some special features to commend it. The simplest operation is dangerous if executed in a reckless manner. The dangers of spleen puncture are by no means negligible, and I am in full agreement with those who say that it should not be undertaken lightly; every detail should be considered and the operator should give his full attention to his task; in fact, simple though it is, he should tackle it in the spirit in which he would a major operation.

SUMMARY

The value of spleen puncture as a diagnostic method in kala-azar is well recognised. The value of the method in the investigation of blood diseases with splenomegaly has not yet been fully explored.

I have performed spleen puncture more than 5000 times and have observed no ill-effects following the operation. A feature of my method is a special syringe attachment designed for this operation.

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SODIUM CHLORIDE IN DIPHTHERIA

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This is an account of part of an investigation carried out in Ruchill Hospital, Glasgow, on cases of diphtheria to observe the effect that the administration of sodium chloride would have on the results of treatment.

CLASSIFICATION OF CASES

The cases were divided into four main groups according to the severity of the acute stage of the illness. In assessing this, use was made of the two methods of judging severity employed by V. Bie.[1] In the first place, an estimate of general intoxication was made, and each case was placed in one of three classes A, B, or C, according to the degree of prostration, the extent of cardiac involvement, and the amount of albuminuria, when considered with the state of fœtor of the breath, the severity of lymphadenitis of the neck, and the quantity of nasal discharge. In the second place, an estimate of the severity of the local lesion was made by noting the extent of throat surface covered by pseudomembrane, and thereby placing the case in one of eight classes.

According to the first method, in Class A were included cases in which apathy was slight, the tone of the heart sounds good, tachycardia little, and albuminuria absent; Class C was that in which prostration was evident, the muscular tone of the first heart sound was poor and tachycardia considerable, and albuminuria was distinct; Class B contained cases intermediate between A and C.

Following the second classification, there were the divisions:—

1. A small amount of pseudomembrane is present on the tonsils.
2. Pseudomembrane is more extensive but does not cover the tonsils.
3. Pseudomembrane completely covers the tonsils.
4. Pseudomembrane completely covers the tonsils and spreads beyond the tonsillar surfaces.
5. Pseudomembrane completely covers the tonsils, spreads beyond the tonsillar surfaces, and involves the margin of the soft palate.
6. Pseudomembrane completely covers the tonsils, spreads beyond the tonsillar surfaces, and involves the margin of the soft palate and the uvula.
7. Pseudomembrane completely covers the tonsils and adjacent mucous membrane, involving the greater part of the soft palate and the uvula.
8. Pseudomembrane completely covers the tonsils and adjacent mucous membrane, and involves the uvula and the soft palate as far forward as the teeth and the posterior margin of the hard palate.

The application of both methods of classification yielded 24 groups in which cases might be placed. Actually there were 14 groups, but as this number was unwieldy for purposes of comparison it was decided to derive the four groups in Table I.

TABLE I.—*Classification of Cases of Diphtheria*

Classification according to the severity of the acute stage.		Groupings according to the classifications of V. Bie.	Dosage of antitoxin (units).
Group.	Clinical description.		
I.	Mild.	A1, A2, B1	4,000– 12,000
II.	Moderate.	B2, B3, B4, B5, C2	16,000– 24,000
III.	Severe.	C3, C4, C5	28,000– 36,000
IV.	Very severe.	C6, C7, C8	40,000–200,000

This classification necessarily excludes cases in which there are no faucial lesions and also carriers. In addition, it was decided to discount cases in which the main diphtheritic lesion was in the larynx, and in which the concomitant embarrassment of respiration was the cause of illness, and also cases which died within twenty-four hours of admission to hospital.

CLASSIFICATION OF RESULTS

The following standards were chosen for the judgment of the final outcome in each case:—

(1) *Satisfactory recovery*, in which recovery took place without the development of paralysis and the patient was fit for dismissal before the 50th day of treatment, or after that date if the cause of delay was intercurrent illness (such as chicken-pox or appendicitis) or the persistence of positive cultures.

(2) *Uncomplicated recovery*, in which recovery took place without the intervention of paralysis; this group, therefore, included cases of "satisfactory recovery" and cases of "delayed recovery," the latter being recovery without paralysis but with dismissal delayed beyond the 50th day for such reasons as vague apathy, anorexia, slight variations of pulse, and albuminuria.

(3) *Recovery without severe paralysis*, which included cases of "uncomplicated recovery" and cases of "recovery after mild paralysis"; the latter were those in which either mild cardiac paralysis, mild muscular paralysis, or both had been present and in which no form of severe paralysis had been detected. Mild cardiac paralysis was taken to be present if, after the middle of the second week of treatment, there were definite irregularity of the heart beat with poor quality of the heart sounds and either tachycardia or bradycardia; mild muscular paralysis was present if there were symptoms of paralysis of the palate, of the extrinsic or intrinsic muscles of the eye, or if the gait of the patient, when permitted to walk, was such as to suggest abnormal weakness of muscles consistent with a recent paralysis.

(4) *Recovery*, which included the cases under paragraph (3), together with those of "recovery after severe paralysis"—i.e., those in which there had been either severe cardiac paralysis, severe muscular paralysis, or both. Severe cardiac paralysis meant cardiac paralysis that was accompanied by signs of cardiac failure such as œdema of the back and extremities, precordial pain, and heavy albuminuria. Severe muscular paralysis included paralysis of the muscles of the pharynx and paralysis of the diaphragm; actually no case of diaphragmatic paralysis occurred in the investigation.

(5) Cases alive after fourteen days' treatment, which included all recovered cases and cases in which a fatal issue took place after fourteen days' treatment.

(6), (7), (8) Cases alive after seven, four, and one day's treatment respectively.

INVESTIGATION AND ANALYSIS OF RESULTS

The results were assessed by a method of statistical analysis that requires that the difference between

the percentage values of a given characteristic in two parallel series must be at least twice the standard error of that difference before it can be stated that the difference is statistically significant. The standard error of the difference between the percentages was calculated from the quantity—

$$\sqrt{\frac{PQ}{N}+\frac{P_1Q}{N_1}}$$

where P and P_1 were the percentages in the two series of a given characteristic, Q and Q_1 were the differences between 100 and P and 100 and P_1 respectively, and N and N_1 were the total numbers of observations in the respective series.

TABLE II.—*General Distribution of Cases*

Classification.		Series receiving extra sodium chloride.			Series not receiving extra sodium chloride.		
Group.	Sub-group.	Cases.	Sub-group per cent.	Group per cent.	Cases.	Sub-group per cent.	Group per cent.
I.	A1	10	27·78		31	27·68	
	A2	26	72·22		78	69·64	
	B1	0	0·00		3	2·68	
	..	36	..	18·27	112	..	19·82
II.	B2	53	74·65		195	73·86	
	B3, 4, 5	7	9·86		51	19·32	
	C2	11	15·49		18	6·82	
	..	71	..	36·04	264	..	46·73
III.	C3	23	47·92		84	59·57	
	C4	18	37·50		40	28·37	
	C5	7	14·58		17	12·06	
	..	48	..	24·37	141	..	24·96
IV.	C6	14	33·33		26	54·17	
	C7	9	21·43		9	18·75	
	C8	19	45·24		13	27·08	
	..	42	..	21·32	48	..	8·50
Total ..		197			565		

Each patient admitted to the diphtheria wards of Ruchill Hospital in the period from May 1st, 1934, till April 30th, 1935, inclusive, was placed in one of two series. The first was treated in the usual manner employed in the hospital; the other series (for which about a quarter of the total accommodation was reserved) received a definite additional ration of sodium chloride. The distribution of cases in the two series is shown in Table II.

In Groups I., II., and III., sodium chloride was administered to each case in one series in the form of a teaspoonful of common salt by mouth thrice daily for the first three weeks of hospital residence. All the cases in these three groups recovered. The results are given in Table III., in which for simplicity the differences between corresponding percentages and the standard errors of these differences have been left out, the superiority of the results in one series over the other being indicated merely by the prefixing of a plus sign or a minus sign to the quotient of difference (D) and standard error of difference (SE) according to whether that superiority is in the series receiving extra sodium chloride or in the other series respectively.

From Table III. it is seen that in Group I. the better results were found in the series of cases which did not receive extra sodium chloride, but there was no significance in these findings. In Group II. the better results occurred in the series of cases which received extra sodium chloride but again there was nothing significant. In Group III. the better results were noted in the series of cases which received extra sodium chloride, and there was distinct statistical significance in these findings. It is noteworthy that this was so in spite of the tendency in Group III. for a greater proportion of the cases to be of a less severe type in the acute stage in the series which did not receive extra sodium chloride than in the other series (see Table II.). Table III. shows that in Groups I., II., and III. there is an improvement in the results of treatment in the series of cases which were given extra sodium chloride, and this becomes more obvious as the severity of the acute stage increases. The expectation, therefore, is that the beneficial results will be even more pronounced in Group IV. While this is probably true, the advent of a number of fatal cases in this group makes it less easy to demonstrate an improvement.

A certain number of cases in Group IV. were given salt by mouth as in the other groups; in others the method employed was to administer daily for a period of three weeks after admission 30 c.cm. of 5 per cent. saline intravenously slowly through a hypodermic needle. In a third set of cases in which the acute stage was of a more critical nature and feeding by mouth was precluded by vomiting, continuous rectal glucose salines were given and maintained until signs of acute toxæmia had passed off. The glucose introduced in this way was the sole source of food, and was barely enough for the purpose; it would, however, tend to correct the hypoglycæmic state that has been shown to be present in such cases,[2] and would lead to improvement. It was also observed in those cases that the onset of a progressive œdema coincided with amelioration of the patient's general condition, and as the œdema passed off when the introduction of large quantities of saline was stopped, it was concluded that the saline was responsible for the œdema and, indirectly, for the patient's improvement; hence, no exception was made by the exclusion of those cases from the series that received extra sodium chloride.

TABLE III.—*Results in Groups I., II., and III.*

Result.	Treatment.	Group I.			Group II.			Group III.		
		Cases.	Per cent.	D/SE	Cases.	Per cent.	D/SE	Cases.	Per cent.	D/SE
Satisfactory recovery.	NaCl	25	69·44	− 0·96	54	76·06	+ 0·77	32	66·67	+ 4·17
	No NaCl	87	77·68		189	71·59		49	34·75	
Uncomplicated recovery.	NaCl	32	88·89	− 0·22	61	85·92	+ 0·70	37	77·08	+ 4·73
	No NaCl	101	90·18		218	82·58		78	55·32	
Recovery without severe paralysis.	NaCl	36	100·00	−	70	98·59	− 0·18	48	100·00	+ 3·76
	No NaCl	112	100·00		261	98·86		135	93·62	
Total cases.	NaCl	36	..	..	71	..	..	48	..	..
	No NaCl	112			264			141		

TABLE IV.—*Results in Group IV.*

Result.	Treatment.	Group IV.			Subgroup C6.			Subgroup C7.			Subgroup C8.		
		Cases.	Per cent.	D/SE	Cases.	Per cent.	D/SE	Cases.	Per cent.	D/SE	Cases.	Per cent.	D/SE
Satisfactory recovery.	NaCl	7	16·67	−	6	42·86	+1·01	0	0·00	−1·06	1	5·26	+1·03
	No NaCl	8	16·67		7	26·92		1	11·11		0	0·00	
Uncomplicated recovery.	NaCl	9	21·43	−0·67	7	50·00	+0·23	0	0·00	−1·60	2	10·53	+1·50
	No NaCl	14	29·17		12	46·15		2	22·22		0	0·00	
Recovery without severe paralysis.	NaCl	24	57·14	−0·32	13	92·86	+0·83	4	44·44	−0·97	7	36·84	+2·19
	No NaCl	29	60·42		22	84·62		6	66·67		1	7·69	
Recovery.	NaCl	30	71·43	+0·80	14	100·00	+1·47	5	55·56	−0·49	11	57·89	+3·71
	No NaCl	31	64·58		24	92·31		6	66·67		1	7·69	
Alive after— 14th day.	NaCl	33	78·57	+1·28	14	100·00	+1·47	6	66·67	−	13	68·42	+3·63
	No NaCl	32	66·67		24	92·31		6	66·67		2	15·38	
7th day.	NaCl	37	88·10	+0·65	14	100·00	+1·02	7	77·78	−	16	84·21	+1·43
	No NaCl	40	83·33		25	96·15		7	77·78		8	61·54	
4th day.	NaCl	40	95·24	+1·34	14	100·00	+1·02	9	100·00	+1·60	17	89·47	+0·92
	No NaCl	42	87·50		25	96·15		7	77·78		10	76·92	
1st day.	NaCl	42	..	..	14	..	..	9	..	..	19	..	..
	No NaCl	48			26			9			13		

The results are shown in Table IV., each subgroup of Group IV. being treated separately.

From this it is seen that, taking Group IV. as a whole, a definite, though insignificant, improvement is shown in the series of cases that received extra sodium chloride, and this is in spite of the disadvantageous distribution as compared with the series that did not receive extra sodium chloride. In Subgroups C6 and C8, which contain the largest numbers of cases, the results are distinctly better in the series that received extra sodium chloride, and the differences are significant in the latter subgroup (which contains the cases that were clinically most severe) as regards survival beyond the end of the second week, total recovery, and recovery without the intervention of severe paralysis; on the other hand, in Subgroup C7, which however contains the fewest cases, the results as a whole were more favourable, but not significant, in the series that did not receive extra sodium chloride.

CONCLUSION

Consideration of the above results leads to the conclusion that the administration of extra sodium chloride to a series of cases of diphtheria is associated with an improvement as compared with a series that does not receive extra sodium chloride. It may also be stated that the beneficial effect is present throughout the series and is not merely shown by an increase in the number of dismissals at the minimum period of treatment and by a decrease in the number of deaths; the changes in the intervening stages are hidden, because such a class of cases, for example, as "recovery with severe paralysis" will receive cases from the class which would rank as "deaths after fourteen days' treatment," and simultaneously give cases to the class "recovery with mild paralysis," and thus will leave its own number with little obvious variation, when such a beneficial effect is at work.

DISCUSSION

The finding that the administration of sodium chloride to cases of diphtheria is associated with better results is in accord with expectations if the view is accepted that in diphtheria there is a considerable deficiency in the secretion of the suprarenal cortex. In support of this view it has long been recognised that suprarenal hæmorrhage is common in fatal diphtheria. At autopsies on such cases, where there has been severe intoxication, changes are almost invariably present in the suprarenal cortices, which vary in different cases from a minimum of cloudy swelling in the zona reticularis to extensive toxic changes, including hæmorrhages, throughout cortex and medulla. The general symptoms in the acute stage of diphtheria, including those referable to the nervous and to the cardiovascular systems, are consistent with symptoms of suprarenal cortex deficiency, notwithstanding, in fatal cases, that toxic changes have been demonstrated both in nervous tissue and in heart tissue. The biochemical changes noted by various observers,[3,4] particularly those in carbohydrate metabolism, are also consistent with deficient secretion of the suprarenal cortex, and I have unpublished evidence that suggests that there is also a deficiency of sodium and chlorine (particularly the former) in the blood-serum in the acute stage of diphtheria. These biochemical changes have all been noted in research work on suprarenal cortex deficiency.[5] Investigators of the condition have shown that it may be alleviated or prevented by giving either extracts of suprarenal cortex or sodium chloride[6]; the former is more effective but the latter is at all times a useful adjuvant. Definite evidence has not yet been produced of the value that injections of an extract of suprarenal cortex would have on the acute stage of diphtheria, and with the present prohibitive cost of potent extracts an adequate trial would be very expensive. It seems, however, that sodium chloride is distinctly beneficial.

This article is published by kind permission of Dr. W. M. Elliott, physician-superintendent of Ruchill Hospital.

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EXCRETION OF DRUGS

ITS INFLUENCE ON THERAPEUTIC RESULTS

WITH SPECIAL REFERENCE TO THE ANTIMONY TREATMENT OF SCHISTOSOMIASIS

BY M. KHALIL *Bey*, M.D. Egypt, Ph.D., M.R.C.P. Lond.

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IN schistosomiasis, as in many other diseases treated with complex organic antimony compounds, it has been observed that although the majority of patients are cured, there are some ("resistant" cases) that need prolonged treatment, while others (a very few) cannot tolerate the drug and may even die. Deaths under treatment have been attributed to idiosyncrasy, and have always been a source of great anxiety. Such a case occurred last January when a child, aged 9, with schistosomiasis died while receiving Fouadin.[1] Nothing abnormal was found at autopsy, and the death was attributed to shock and heart failure; but chemical analysis revealed a large quantity of antimony in the liver. This was surprising because no such accumulation is found in the liver when the drug is administered to animals.

Fouadin is excreted mainly through the kidneys; only 2–3 per cent. can be recovered from the stools and none from sweat, sputum or milk. An attempt was made to measure roughly the amount excreted by different individuals under treatment, and this was made practicable by a simple colour reaction adopted by Dr. Ali Hassan, biochemist to the Research Institute, Cairo.

The test is as follows.

To 5 c.cm. of the urine add 5 c.cm. of a fresh 0·05 per cent. solution of $FeCl_3$ and make the mixture alkaline by adding strong ammonia. A red colour indicates the excretion, in some form, of the fouadin nucleus. The depth of colour is found to correspond approximately to the amount of antimony in the urine as revealed by the Reinsch test. The excretion of antimony continues, however, after the colour-test has become negative.

It was found that the amount and rate of fouadin excretion differed greatly in different persons. Patients with advanced renal lesions gave a negative test during the 24 hours following administration of the drug, while children with good renal function (as shown by urea estimation, the urea-concentration test, and urine analysis) began to excrete fouadin 15 minutes after the injection. Between these extremes there was every variation. The interesting discovery was then made that patients who excreted the drug very quickly belong to the class that are not cured by the ordinary course of treatment. One child in this group required 39 injections instead of the usual 9, and towards the end of the course the dosage had to be increased. On the other hand, those who excreted the drug very slowly are those that readily show symptoms of intolerance.

By means of the test described it is possible to test indirectly the excretion of antimony after the first injection, and to adjust the dose according to the results—increasing it for quick excreters and reducing it for slow excreters. In this way the cure will not be delayed and serious accidents will be avoided. The same procedure might, I suggest, be applied to treatment with other drugs that are mainly excreted by the kidneys. Thus in using the arsphenamine (salvarsan) compounds in syphilis the dose can be adjusted according to the results of the Abelin test on the urine. It seems that "idiosyncrasy" or "resistance" to treatment with active drugs are really conditions of abnormally slow or rapid excretion.

[1] See Khalil, M., and Betache, M. H.: THE LANCET, 1930, i., 234.

MEDICAL SOCIETIES

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held at the Royal Victoria Hospital, Newcastle-upon-Tyne, on May 22nd, with the president, Dr. RUTH NICHOLSON (Liverpool) in the chair, Mr. HARVEY EVERS (Newcastle) read a note on

Intractable Dysmenorrhœa

The patient, a single woman aged 26, commenced to menstruate at the age of 14½, and had had spasmodic pain during the first few hours of each period from the age of 17½. The dysmenorrhœa gradually increased in severity so that she eventually had to give up work. Treatment of various kinds had been carried out, both medicinal and operative, including dilatation of the cervix on two occasions, once with laminaria tents. Finally she was cured by division of the superior hypogastric plexus. Of four other cases treated in the same way three were relieved of pain, one was not. No complications followed the operation.

Prof. E. FARQUHAR MURRAY (Newcastle) remarked that most cases of dysmenorrhœa were cured by dilatation of the cervix followed by laminaria tents. One case in whom dilatation had failed obtained complete relief from a barbiturate, Compral. He did not like abdominal operation for dysmenorrhœa.—Prof. MILES PHILLIPS (Sheffield) referred to Leith Murray's method of dividing the internal os with a bistoury, and then dilating the cervix further. Prolapse of an ovary and retroversion was a possible cause of dysmenorrhœa. He had seen unilateral dysmenorrhœa from cornual adenomyoma.—Mr. M. M. DATNOW (Liverpool) said that he had seen three cases of intractable dysmenorrhœa completely relieved by presacral neurectomy, but simpler methods were often effective. He advised dilatation of the cervix with insertion of a flavine pack into the uterus and administration of 0·5 c.cm. pituitrin intramuscularly every six hours for 24 hours, when the pack was removed. This produced uterine contraction.—Mr. T. F. TODD (Manchester) thought that failures following presacral sympathectomy might be due to incomplete division. A more thorough procedure was to block the whole of the supply by injecting absolute alcohol into the pelvic plexus on each side, which could easily be done through the lateral fornices. The operation had been criticised as completely unscientific when applied for the relief of dysmenorrhœa. It should be remembered that during the war dysmenorrhœa practically disappeared.

Blood Replacement after Hæmorrhage

Dr. WILLIAM HUNTER (Newcastle) described his routine for treating patients who had suffered blood loss. After a trial of several alternatives, he had

found the most satisfactory solution to be Ephedrine hydrochloride gr. 1, glucose grs. 440, gum acacia grs. 525, water to one pint. He showed a patient who had been treated in December, 1935, for excessive blood loss after incomplete abortion. The case illustrated the value of an immediate saline even when arrangements were being made for blood transfusion. —Mr. DATNOW referred to the very efficient blood transfusion service in Liverpool, and to the portable apparatus he had been using for some time. It consisted of a thermos flask in which blood could be stored for 24 hours and warmed up again, as it passed out, by immersing the tube in a basin of warm water.

A Surgical Mistake

In a case reported by Mr. F. E. STABLER (Newcastle) the patient (under the care of Mr. Evers) was a married woman, aged 42, who had had six children, the youngest being 11 years old. For six months she had complained of pain in the left lower abdomen with exacerbations at the menstrual period, which were becoming prolonged and excessive. On examination she was found to have a left-sided tubo-ovarian inflammatory mass, and she was treated at home for some weeks to allow subsidence to occur. On her return to out-patients, the mass was larger and the symptoms more urgent. She was admitted and the abdomen was opened on March 29th this year.

The omentum and many coils of large and small intestine were matted to the bladder fundus and over the rest of the pelvis. After careful dissection for three-quarters of an hour, it was possible to define the fundus of the uterus, the rectum, and a left-sided ovarian abscess around which coiled a distended Fallopian tube, which was adherent at its tip to the rectum. The whole was set in a plaster-of-Paris-like mass of cellulitis. Not wishing to remove a portion of the rectum with the tube, Mr. Stabler divided the tube, leaving its tip attached to the rectal wall, and proceeded to enucleate the tube from the surrounding cellulitic mass. He followed it up for six inches when it appeared to become much thicker in diameter; after freeing a further two inches, it suddenly became obvious that what had been dissected out was six inches of mucous membrane of colon and two inches of all the coats of the colon. What had appeared to be rectum was a double loop of small intestine adherent in the depths of the pouch of Douglas and showing such a degree of cellulitis in its wall as to make it mimic large intestine. He was faced with a free end of large intestine from which dangled a tubular piece of mucous membrane, and at the bottom of a cellulitic cave a hole like the hole of a bath plug. Whilst enucleating the ovarian abscess he debated the best line of treatment. His first thought was to bring the loop out on the surface as a permanent colostomy, but he reflected that there would never again be a possibility of anastomosis and he decided to attempt this. Dr. Mabel Campbell passed a Bozeman's douche nozzle up the anus until it appeared in the abdomen, and by withdrawing it brought out a piece of silk which, in turn, was attached to the tube of mucous membrane. He then encircled the butt end of the divided bowel by many interlocking mattress sutures, pulled on the silk until the butt end came into contact with the hole at the bottom of the pelvis and then attached the mattress stitches to the mass of cellulitic tissues surrounding the hole. An imperfect attempt was made to put a continuous stitch around the anastomosis. He considered and decided against a temporary colostomy, and closed the abdomen with a drain down to the site of anastomosis. For eight days she was given nothing but milk diet; her diet was then increased, with the addition of liquid paraffin. On the 10th day, after a dose of castor oil, her bowels moved naturally.

The patient had made a straightforward recovery, and was now getting up. An X ray film shows the site of the anastomosis, which allows the barium to pass freely, but does not remain filled, probably owing to some still existing cellulitis.

Prof. MILES PHILLIPS congratulated Mr. Stabler on the way he had got out of a difficulty so well.—Prof. W. GOUGH (Leeds) remarked that the operation carried out was the Rutherford Morison operation on the rectum.—Prof. FARQUHAR MURRAY said it was difficult to make out tissue planes in cases of pelvic infection. Naked-eye appearances did not help very much. In difficult cases it was a good plan to instil saline into the rectum to make sure there was no leak.

Local Developments in Maternity Service

Prof. FARQUHAR MURRAY outlined the Newcastle policy, illustrating his remarks by maps of Northumberland and Durham. There was a complete consultant service for the Northumberland area. He referred to the value of having an emergency set (a list of its contents was handed round) kept ready at various centres which could be taken to the patient's house at a few moments' notice.—Prof. MILES PHILLIPS regretted that the local health authorities did not coöperate everywhere. Emergency life saving was very important. His own view was that women should be confined in hospital, if for no other reason than for relief of pain.

Prof. MILES PHILLIPS described the correct method of inserting a Sims speculum and the correct Sims position, illustrating his remarks by means of lantern slides and a cinematograph film. The patient should lie 90° across the table and the speculum should be inserted along the posterior margin of the vulva.

Mr. STABLER also read a short addendum to a case he described to the society a year previously under the heading of "Successful removal of an ovarian carcinoma during pregnancy." A solid ovarian tumour was removed during obstructed labour from a girl of 18. The pathologist's report was adenocarcinoma. She became pregnant again and was successfully delivered by forceps. It was now over three years since the ovarian tumour was removed. When first shown, the growth was regarded by Prof. Gough as a granulosa-cell tumour. A more recent report from Prof. Schiller (Vienna) ran as follows:

"This is a typical dysgerminoma as seen not rarely with young girls. These tumours, having no hormonic influence, are often combined with hypoplasia and infantilism. In the material of our clinic, 95 per cent. of the cases are not malignant. The slide shows numerous mitotic figures, probably in consequence of rapid proliferation; otherwise no evidence of malignancy."

EDINBURGH OBSTETRICAL SOCIETY

AT a meeting of this society held on May 13th, with Dr. DOUGLAS MILLER, the president, in the chair, Mr. W. A. COCHRANE read a paper on

Birth Injuries of the Child

On this subject, said Mr. Cochrane, the obstetrician, the orthopædic surgeon, and the neurologist found common ground, and by their united effort much might be done to elucidate the problems relating to the birth injuries of the child. He confined his remarks to their mechanism, prognosis, and early treatment.

CONGENITAL TORTICOLLIS

It was recognised that there was an intimate relationship between the presence of a sternomastoid tumour and the subsequent development of wry-neck, and also that both these conditions had some connexion with long and difficult labours. Of 30 cases

of torticollis investigated by Middleton, 25 gave a definite history of sternomastoid tumour shortly after birth. The fibrosis in the muscle resulted from venous obstruction, œdema being one of the essential factors in producing it. Brooks of Chicago in an interesting series of experiments established the fact that ligature of the vein from a muscle produced massive fibrous tissue replacement of the muscle. The venous obstruction was attributed to the extreme rotation of the head, the tense muscle being capable of compressing the veins as they passed beneath it. This was the condition of the experimental muscle after venous ligation. Most cases of torticollis were now held to result from fibrosis in the sternomastoid muscle consequent upon the development and absorption of the so-called sternomastoid tumour of infancy, this tumour being the outcome of acute venous obstruction in the muscle during labour.

OBSTETRICAL PARALYSIS

Mr. Cochrane said that birth palsy was due to an injury of the brachial plexus. Most cases followed a difficult or prolonged labour. In the available statistics, particularly those of Sever of Boston, the vertex presentations outnumbered the breech presentations, boys and girls were equally affected, and the right arm more frequently than the left. The mechanism of the injury was the stretching of the plexus when the head was forcibly separated from the shoulder, but a tearing was most likely to be produced when the head was also rotated away from the arm on which traction was made. Such risks occurred in cases of vertex presentation when there had been failure of the shoulder to rotate. The same dangerous combination of rotation and traction could occur in the delivery of the head in a breech case. With the shoulder held and the head carried to one side, the clavicle being intact, considerable force was necessary to injure the plexus. The fractured clavicle, by allowing the weight of the shoulder to drag upon the plexus, predisposed to greater injury from traction. The gravity of the lesion could be estimated only after a period of observation. In the whole arm type complete and perfect recovery did not take place, as the rupture frequently occurred close to the intervertebral foramina; in the upper arm type some return of voluntary power usually took place; in lower arm palsy the prognosis was unfavourable. Mr. Cochrane discussed postural treatment and the use of splints, massage, and re-education, and also operative treatment by division of the subscapularis tendon.

INJURIES OF THE LIMBS

In the experience of Truesdell, birth fractures were always complete, and the presence of callus might be the first sign of the occurrence of fracture of the clavicle. In a fractured humerus, a small, straight Thomas's splint might be used as advised by Gibberd, with a thin elastic band as extension. By the second week after fracture it was possible to correct the remaining deformity by careful manipulation. Birth fractures of the humerus were always associated with some degree of radial nerve paralysis, which was not permanent. Birth fracture of the humerus with wrist-drop might be associated with Erb's paralysis, and it was important that the latter should not be overlooked. In fracture of the femur the upper fragment was abducted, flexed, and externally rotated, and the lower fragment must be brought into line with it by bandaging the limb to the trunk. The injured limb was best brought over as far as possible towards the opposite side of the body.

SPASTIC PARALYSIS

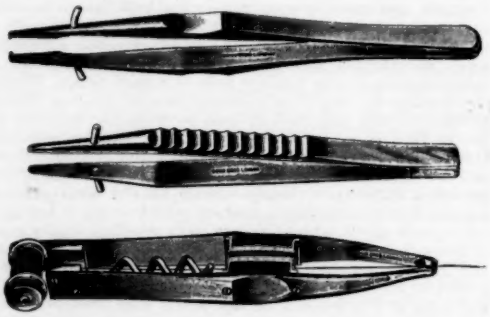
Cerebral paralysis in children could result from antenatal, natal, or postnatal causes. It was doubtful whether most cases of spastic paralysis met with in practice were due to natal causes. Many authorities held that the congenital diplegias which constituted by far the largest group of infantile spastic palsies were not to be attributed to meningeal hæmorrhage at birth, but were the result of various pathological processes of intra-uterine origin. A variety of spastic paralysis which required special mention was that due to injury of the spinal cord itself. Ford, Crothers, and Putnam had drawn attention to this form of trauma, and thought it required greater recognition than it received at present. The injury occurred during traction in delivery. The prognosis from orthopædic care in cases of spastic paralysis where there was not much mental enfeeblement or athetosis was fairly good.

NEW INVENTIONS

SUTURE INSTRUMENTS

MOST instruments for tying ligatures have the serious fault of either slipping or fraying the suture material particularly when it is wet catgut. The instruments here described have stood the test of use for a long period and are free from these disadvantages. They are particularly useful when handling of suture material must be avoided and when sutures must be tight. These requirements are not infrequent in orthopædic operations.

Suture-tying dissecting forceps.—Two round steel pins ⅛ inch long are fixed on the outer surfaces of the dissecting forceps and are used as a cleat, by taking a half turn round one or both pins after tying each knot and before pulling it taut. It is useful to have a plain and a toothed pair as shown in the illustration.



Ligature-tying forceps.—Catgut is provided ready-wound on a glass spool and the grip is provided by thumb and finger pressure on a friction area which is unserrated and of sufficient size to give a secure non-fraying contact. The instrument may be used in conjunction with the suture-tying forceps described above.

Both instruments have been made for me by Messrs. Down Bros. (21, St. Thomas's-street, S.E.1), who also supply suitable spools of Merson's catgut.

ERIC I. LLOYD, F.R.C.S. Eng.

REVIEWS AND NOTICES OF BOOKS

Principles and Practice of X-ray Therapy

By FFRANGCON ROBERTS, M.D. Cantab., M.R.C.P. Lond., D.M.R.E., Physician in Charge of the Douty X Ray Clinic, Addenbrooke's Hospital, Cambridge. London: H. K. Lewis and Co., Ltd. 1936. Pp. 214. 10*s*. 6*d*.

THROUGHOUT the thirty years during which X rays have been employed in the treatment of disease, both benign and malignant, the radiologist has been handicapped by inadequate means of measuring dosage; and apart from this, the selection of cases submitted to him for treatment has not always been judicious. Those beginning the study of X ray therapy now are in a better position to achieve success; and though even now we are far from finality in our knowledge of theory or practice a fundamental essential for intelligent treatment is a grasp of the scientific principles upon which X ray therapy is based. Dr. Ffrangcon Roberts deserves thanks for his clear exposition of the nature and source of X rays, their absorption in matter, their measurement both as regards quality and quantity, and the apparatus employed in their production. Succeeding chapters deal with the relationship between surface dose and depth dose, cross-fire radiation, the time-factor, and the expression of dosage. The action of X rays on normal tissue is dismissed in a comparatively small chapter which might well be expanded in a later edition.

The second half of the book is concerned with the technique of treatment. Since a large proportion of patients referred to the radiologist for treatment are suffering from malignant disease it is satisfactory to find a chapter devoted to the general principles involved in the treatment of such conditions; this chapter is well written, and, though concise, includes all the better-known theories. The author draws attention to the need for further education of the profession as regards the proper place of X ray therapy: "the X-ray department should not be regarded as the ante-room to the mortuary." Techniques for the treatment of malignant disease in the more common situations, of diseases of the blood and lymphatic systems, of non-malignant gynæcological conditions, of hyperthyroidism, of diseases of the skin, and of various other conditions are described. The teaching is sound and the arguments in favour of the author's own methods are convincing. The recommendations are based on general principles, and the technical details supplied are brief but sufficient. This book may be welcomed as an excellent introduction to the vast problems of X ray therapy and should be of great assistance to those concerned with the subject.

Diseases of the Eye

Eighth edition. By Sir JOHN HERBERT PARSONS, C.B.E., D.Sc., F.R.C.S., F.R.S., Consulting Surgeon, Royal London (Moorfields) Ophthalmic Hospital. London: J. and A. Churchill Ltd. 1936. Pp. 705. 18*s*.

THE continued popularity of this text-book is likely to endure. It is especially explicit on the fundamental parts of the subject which it is essential for the student to master and the opening chapters on the physiology of the eye, on physiological optics, and on the neurology of vision would be hard to beat. The same applies to the section on examination of the eye so far as external, ophthalmoscopic, and functional examination go. The use of the slit-lamp is indicated, but its details are beyond the scope of this book. The main portion of the work is an able account of all the common diseases of the eye, including their operative treatment on conservative lines, and there are appendices, one of which will probably be found especially useful as it deals with the tests now used in the examination of candidates for the Royal Air Force. There is not much in the text that is new, but the reader is made to feel that while many parts of ophthalmology have been put on a sound footing based on science and experience, others are in a more or less fluid condition in which advances may reasonably be expected in the future. Among these latter may be instanced the theory and treatment of glaucoma, and the pathology of cataract and of sympathetic ophthalmia. As stated by the author in his preface, recent physiological and biochemical researches offer much promise for the future, but as yet their practical application is limited.

A Hundred Years of Medicine

By WYNDHAM E. B. LLOYD, M.A., M.R.C.S., D.P.H. London: G. Duckworth and Co., Ltd. 1936. Pp. 344. 15*s*.

IN this book, the latest of the Hundred Years Series, Dr. Lloyd sets out to give an account of modern medical history that will be of value not only to the lay reader, for whom it is primarily intended, but also to medical students and practitioners. The task was difficult. To write on a technical subject in such a way as to hold the attention of both lay and professional readers requires wide knowledge, sound judgment in the selection of material, and the gift of lucid and concise expression. These things Dr. Lloyd possesses, and he has produced a valuable and interesting book. Keeping his pages almost free from technical terms, and entirely free from purple patches, he gives an enormous amount of information, well arranged and easy to assimilate.

The book begins with a rapid sketch of the chief landmarks in the advance of medicine up to a hundred years ago. This is followed by a more detailed description of the important discoveries that have since been made in medical science and of their application in medical practice. It is an impressive story. The modern medical student will find it difficult to believe that until well into the nineteenth century surgeons wore their oldest frock coats, often heavily encrusted with dried blood and pus, in the operating theatre, and that some even attached a certain sense of superiority to these poisonous garments, "much as schoolboys feel the prouder that their 'colours' have not the newness of the tyro's clothes." Since it was a common practice to keep ligatures hanging in the button-holes of these operating coats ready for immediate use, it seems strange that operations did not more frequently end in tragedy. All that has been abolished, but the problem of the overcrowded out-patient department has proved more difficult to solve. Even towards the end of the century Dr. Robert Bridges, afterwards Poet Laureate, during his year of office in a great London hospital saw and prescribed for 7735 persons, of whom 5330 were new patients. The average time he spent on each case was 1·28 minutes, and he congratulated himself on having given a separate audience to the troubles of 150 talkative women in 3¼ hours.

The book concludes with a chapter on the development of public health administration during the last hundred years, and an epilogue in which the more important of the unsolved problems of preventive medicine are briefly discussed. No attempt is made to describe the advances in surgical technique, since, as the author points out, the subject could not be adequately treated without assuming a knowledge of anatomy in the reader; and the chapter on State medicine, which hardly reaches the standard of interest set by the other chapters, is restricted to what has been done in England. This was doubtless enforced by consideration of space, but the account of child welfare would have gained by some indication of what we owe in this field of preventive effort to Pierre Budin and other French workers of last century. The book may be recommended to medical students and to practitioners who have made no special study of the history of medicine.

Medicina Italica

Second edition. By Prof. ANDREA FERRANNINI, Royal University of Naples. Milan: Ufficio Stampa Medica Italiana. Pp. 295. 25 lire.

THE aim of this interesting book is to prove that Italy can justly claim to have been in the forefront in the advance of medical science in all its branches. Before the Christian era, Alcmeon precedes Hippocrates, and from the first century A.D. until the Middle Ages Celsus and Pliny dominate the medical thought of the world. In Italy were founded the first university chairs in medicine and surgery, and in Italy was born the science of anatomy. The names of Leonardo da Vinci, Malpighi, Morgagni, Scarpa, and Fallopius are quoted in justification of the claims made.

The first microscope was constructed by Galileo Galilei in 1612. It was Galvani, 1737–1798, and Volta, 1745–1827, who laid the foundation of medical electricity. Ramazzini was the originator of the science of industrial medicine. Coming down to our own times, Prof. Ferrannini enumerates the discoveries and advances made in every branch of medicine by such Italian workers as Banti, Lustig, Castellani, Angelo Mosso, Golgi, Marchi, Riva Rocci, Luciani, Lombroso, Forlanini, Grassi, Bignami, Baccelli, Sclavo, Durante, and Putti. In a short chapter devoted to the Red Cross, its origin is traced to a special order founded in the sixteenth century by Camillo de Lellis, whose followers wore a red cross on chest or arm. The aims of this society were to give help to the sick, not only in their homes, in the hospitals, and during epidemics, but also on the field of battle. At need the Order was authorised to help the wounded in war, even if enemies, by a special regulation of Clemente VIII., "Hostes dum vulnerati fratres." The book has a full bibliography and a good index both of authors and subjects.

Elementary Surgical Handicraft

By J. RENFREW WHITE, Ch.M., F.R.C.S., F.A.C.S., Surgeon to the Dunedin Hospital, New Zealand. London: J. and A. Churchill Ltd. 1936. Pp. 250. 8s. 6d.

WHEN the author states in his preface that surgery means handicraft, and demands skill in certain highly specialised movements of the fingers, he has himself offered the most pertinent criticism of his book. For how can manual dexterity be learnt save by apprenticeship to one who is himself a master of the craft, and by constant practice? It is certainly most difficult to learn "the tricks of the tool's true play" from a book, and this work has little claim to be considered more than a guide to bandaging and knot-tying. It provides an odd mixture of good practical advice and accounts of obsolete methods; of instruction so elementary as to be out of place in any medical text-book, and so advanced as to be suitable only for a treatise on operative surgery. It is difficult to understand what type of student it has been written for, since bandages are described in any manual of first aid, and this book contains no references to aseptic technique, the choice of instruments designed to avoid tissue damage, the use of plaster-of-Paris, the management and passage of catheters, and no description of the technique of aspirating the body cavities and of intravenous infusion. The illustrations though of no artistic merit are of value in helping one to follow the text, but Fig. 219 is incorrectly drawn and Fig. 132 is not what the text describes. We are tempted to hope that the students of Otago University are not examined on this book.

The Toxæmias of Pregnancy

By DAME LOUISE MCILROY, D.B.E., LL.D., M.D., D.Sc., F.C.O.G., M.R.C.P., Consulting Obstetrician and Gynæcological Surgeon, Royal Free Hospital; Surgeon, Marie Curie Hospital. London: Edward Arnold and Co. 1936. Pp. 355. 14s.

THIS volume presents the Ingleby lectures for 1934 given in amplified form. It is not intended to provide a text-book for medical students but is designed for those obstetricians, practitioners, and biochemists who are interested in the so-called toxæmias of pregnancy. The author directs attention to the fact that the name "toxæmia" is a misnomer in this connexion. Certain metabolic changes take place in normal pregnancy, and what we call toxæmia is a condition in which there is an exaggeration of these processes. In other words, it is probable that any toxæmia present is more likely to be the result of the condition than the cause. A contributory cause of the first importance may be deficiency in nutrition or some pre-pregnancy disease.

The first section summarises what is known of the causes of maternal and fœtal mortality with a special reference to the subject under consideration. This is followed by a chapter on the existing theories of causation, which does little more than emphasise the abysmal ignorance that exists in this direction. There follow accounts of the liver and kidney function in pregnancy, and of nutrition and diet, and the main bulk of the volume is concerned with the clinical aspects of toxæmic conditions. Dame Louise quotes constantly from her own wide clinical experience, and the conclusions drawn therefrom are more convincing than those which she quotes as the opinion of others. Second-hand evidence never takes us far, and this book contains too much of it. Moreover, the bulk of this evidence is a matter of theory rather than of practice, and this is no subject for arm-chair philosophy. Dame Louise has indicated the places where exact knowledge is lacking and has suggested more than one possible line for productive research. Her conviction is that the way of progress lies, not so much in a laborious research for illusive toxins or the elaboration of methods to estimate their activities and damage to tissues, but rather in the investigation of disorder as a deficiency disease. Her thesis will interest all who approach the toxæmias of pregnancy, whether from the consulting-room, the clinic, or the laboratory.

THE LANCET

LONDON: SATURDAY, JULY 18, 1936

MEANS AND NEEDS

FROM the general to the particular. Last week we set out an attempt by the International Labour Office to shape economic and social legislation on a basis of standards obtained by scientific research. This week the new proposals of the Unemployment Assistance Board give a concrete example of how economic and social legislation is working out here and now. Unemployment assistance is required to provide shelter, food, clothing, and warmth for its dependants; and it seems to be in that order of urgency that their primary needs are to be considered. For before any money is allowed for food, clothing, and warmth under the new proposals, one-quarter of a household's assessment is to be regarded as spent on rent. Admittedly the individual circumstances of a household may alter, but a quarter of the income is held by the Board to represent what the majority of households will have to spend on this big item in the weekly budget. This should be borne in mind in making comparison of the scale provisions, set out on another page, with any estimate of the cost of adequate diet. The scale allows 24*s.* for a married householder and his wife, 10*s.* and 9*s.* respectively for each other man and woman over the age of 21, and 8*s.* for those between 18 and 21 years. These rates, even with a quarter deducted for the rent allowance, are enough at least to cover the 5*s.* 11*d.* considered by the British Medical Association to be the lowest figure capable of supporting both health and working capacity in an adult. If, alternatively, the Ministry of Health standards are taken as the basis of comparison, a few pence would be left over with which those of 16 years and more could buy clothes and other necessities. The next group in the scale, being adolescents between 14 and 16 years of age, is to receive 6*s.*, while for younger members of the household the sum allowed before rent deduction is consistently a few pence below the B.M.A. standard amounts for food alone, leaving a minus quantity to pay for shoes, clothes, breakages, and the other considerable expenses of a young family. Since these expenses are essential for civilised life, it may fairly be deduced that either the Board is not entirely convinced of the success of the attempts made to translate theory into practice, or that socio-political considerations, such as the patent undesirability of allowing to the workless a higher rate of living than that enjoyed by, say, the family of an agricultural labourer, have influenced their conclusions. Possibly both factors may have operated, because the Board itself states in its report for 1935 that "after study of the available material it had to be recognised that there was no absolute criterion or scientific basis of need."

Although if individual cases are considered there may be some justification for this statement, the plain necessity of a minimum of calories and the value of suitable food to growing children are facts which cannot be ignored. Something firmer than optimism would be required to buy a pint of milk a day (at 1*s.* 9*d.* a week) along with adequate maintenance and clothing for a child of 4 or 5 on 3*s.* a week. Furthermore, the average basic amounts required, figures which should be a guide where such large numbers of people are considered, are known with sufficient precision to serve as a guide in setting out minimum requirements. It may be argued, however, that benefits outside the scale allowance are available to the unemployed man's household. The provision of free school meals, no longer reckoned by the Board among the family resources, is an example of these, but it varies much from one local authority to another. In some areas it certainly helps to make up for the shortcomings of the allowances for children under 14 years. The new proposals make concessions beyond those of the existing regulations. The reduction in allowance for a large family is abolished, provided the total amount does not exceed the applicant's unemployment insurance rate. The allowance to some families is to be the same as they would receive if entitled to insurance benefit. Prolonged unemployment is to constitute a "special circumstance" permitting of a greater allowance under the discretionary powers of the Board's officers. These concessions may do much to improve the lot of the unemployed. How much it is difficult to estimate, for they seem as ill-defined to us as does the scientific basis of nutritional requirements to the Board. In any case the concessions are likely to be patchy in their application, and in the less fortunate areas the children who are dependent on the scale ration alone will still be inadequately nourished. The Board has not supplied a complete answer to the basic question: "What is needed by the common people and how can the need be supplied?" But it has met with some degree of sympathy and imagination the inherent hardships of a situation which is world-wide.

MEDICAL STAFFING OF MENTAL HOSPITALS

THE inadequacy of the medical staff in many mental hospitals throughout the country was the subject of comment last week by Sir LAURENCE BROCK, whose position as chairman of the Board of Control gives weight to his criticism. It is not qualitative but quantitative inadequacy to which he drew attention; but one breeds the other, since a doctor whose time is filled up by what is labelled "routine work" has not much energy left to give individual attention, even to patients who clearly need it. What then is this routine work which must take precedence over all else? It consists of ward visits and rounds; the care of the physically sick; periodical mental and

physical examinations; reports; letters; interviews with relatives; lectures to nurses; and the hourly grapple with the everyday problems and minor emergencies of the hospital population. It is almost impossible for anyone who has not lived in a mental hospital—whether as doctor, nurse, administrative officer, or guest—to realise what inroads such duties make on energy as well as on time. If that were all, and taking into account the numbers of patients whose lives go quietly on from day to day without making much fresh call upon the doctor, the proportion of medical staff to patients may actually be much less at any time, and especially during the holiday season, than would appear from the figures in the annual reports, for in any large hospital the staff may be working during a considerable period of the year, if no locum tenens is provided, below full strength. And when the full quota of doctors is on the spot, special calls upon one or other member of the staff, for example taking part in the hospital athletics, may mean that each of his colleagues habitually has to care for more than the hundreds officially allotted to him, even if that total does not always reach the high figures quoted by Sir LAURENCE last week.

Fortunately for psychiatry and for the physicians themselves, if unfortunately from the point of view of available hours in the day, work reaches far beyond the routine duties already outlined. Occupation therapy, whether curative or educative, demands for its proper effect that one or more of the doctors should understand broadly its processes and enter into active coöperation with those who carry it out; physical therapy involves the knowledge, prescription, and often the actual use of irradiation and of electrical or radiological apparatus; the laboratory will provide anything from whole-time work for specially appointed men, who have had precious pathological experience, to observations along some given line by a medical officer with special knowledge or interests, and, in some places, the burden of innumerable and often repeated bacteriological investigations in the search for carriers of epidemic illness. In these spheres the need for adequate medical staff is, of course, associated with the need for adequate technical staff. The care of the boarded-out patient, living outside the hospital but under its ægis, has not in England reached the extent which it has in Scotland; but it is a branch of activity which has grown in some of our hospitals, though we have no Saint Dymphna, as in Belgium, nor widespread family and heredity investigations as elsewhere on the continent [1] associated with it. Work in the out-patient clinics has grown greatly, with a value not only to the patient but to the doctor and his hospital in that it brings him a useful experience of cases at an early stage, and of neuroses seen in a different setting from those in his own institution. This, linked with the fact that the facilities for the rate-aided voluntary patient bring him to hospital at a stage in his illness when he is usually more coöperative and more capable of useful conversation than when already certified, adds new ranges to the ancient rock of sound psychiatric practice, the frequent, observant, and careful interview between patient and doctor. What chance there is of ample time for interviews of this kind, whether consolatory for the non-coöperative or definitely therapeutic for the more responsive patient, can be guessed from a knowledge of figures of patients per doctors as actually allotted in any given hospital or section of it, in the light of the duties which have to be fulfilled before the doctor can begin his individual interviews at all.

Finally, there is the need for research, and while that is a word worn with being stretched to cover much which does not deserve the name, it will not be denied that coördinated study of facts gathered, symptoms observed, families questioned, or tests applied is a necessity of life to any mental hospital or mental deficiency institution if it is to avoid stagnation. Much patient and courageous work is now being done but only at the sacrifice of leisure or, what is almost as serious a matter, of time which should be spent in reading widely or in making contact with experts in the chosen field of study. From another country comes the complaint "appropriations for State hospitals come from hard-boiled legislators who can see the value of a new barn but who cannot appreciate the worth of an additional chemist or physiologist on the staff." [2] The value of an adequate medical staff cannot be set out in financial terms. What is needed is not only to provide so far as we can good conditions for the care and, where possible, the re-education of the patient, but conditions for the physician employed which will use the best he has to give and not waste it in a discouraging struggle against overwhelming odds. We need to make it worth while for active-minded young men not only to enter but to remain in the mental hospital and mental deficiency services and to foster the admirably progressive team-work whose existence in many hospitals in the present circumstances is a good omen for the future. We need conditions which will ensure that, if time brings any new fact which can be applied to the better treatment of mental disorder within the field of the hospital, the net of observation and research will be wide enough to have some hope of catching and holding it.

[1] Kaldeway, Walther: Allg. Zeits. f. Psychiat., 1935, ciii., 295.

IDIOSYNCRASY AND TOLERANCE

THE doses of drugs which are found in the pharmacopœias of the world are doses which experience has shown to be without toxic effect and yet to be of value in the treatment of disease. As a rule they tend, quite rightly, to be on the safe side. When the average dose is given to a person and none of the signs and symptoms proper to its administration results, it is said that the individual is tolerant to the drug. If on the other hand such signs and symptoms are produced in unusual degree it is customary to say that an idiosyncrasy to the substance exists. There are

[2] Kasanin, J.: Amer. Jour. Psychiat., 1935, xcii., 397.

those who would restrict the term idiosyncrasy to a reaction wholly unlike the normal reaction as when, for example, aspirin produces asthma or urticaria. It is, however, convenient to apply the term also to simple hypersensitiveness and to say that a person shows idiosyncrasy when symptoms of salicylism follow the ingestion of 40 or 50 grains of sodium salicylate. Idiosyncrasy in this sense and tolerance are simply obverse and reverse of the same phenomenon.

The reactions produced in any tissue by a drug are dependent on two main factors. In the first place each tissue has its own particular susceptibility which varies from person to person, and in the second place drugs may reach a tissue in very different concentrations owing to variations in the rate of absorption, excretion, destruction, and storage. The relative importance of these various factors has been much discussed and in the case of many drugs no definite conclusions have yet been reached. A suggestion put forward on another page by Prof. KHALIL of Cairo is worthy of attention. KHALIL believes that idiosyncrasy and resistance to treatment are in some cases due to abnormally slow or rapid excretion; and though the idea is not entirely new nor universally applicable the evidence adduced is particularly convincing and the deductions have immediate practical application. KHALIL has shown that fouadin, a complex organic antimony compound used in the treatment of schistosomiasis, is excreted by different individuals at very different rates. Those who excrete the drug quickly are not cured by ordinary doses, while those who excrete the drug slowly are apt to show signs of intolerance; in other words tolerance and idiosyncrasy in this case are determined simply by rate of elimination. He suggests that the therapeutic dose should be adjusted according to the rate of excretion determined by a test dose, more being given to the quick excretors and less to those excreting it slowly. The proposal is reasonable and further evidence of its success in practice will be awaited with interest. Its application to other drugs mainly excreted through the kidney might well be considered.

There is a wide variation in the response of an unselected group of individuals to any given drug. Many years ago for example, P. J. HANZLIK [1] found that the amount of sodium salicylate required to produce mild symptoms of salicylism varied from 50 grains in sensitive persons to 500 grains in tolerant persons. Any test which would enable the exceptionally sensitive and insensitive cases to be detected would be valuable, especially when dealing with drugs more dangerous than sodium salicylate. Many drugs however are eliminated by routes other than the kidney or are completely destroyed in the body; and in the end there is always the more elusive factor of variable tissue susceptibility, which is clearly seen when drugs are allowed to act on isolated tissues. It is only by full investigation of such special cases as fouadin, where one factor is of outstanding importance, that the phenomena of idiosyncrasy and tolerance in the intact animal will be more completely understood.

[1] Jour. Amer. Med. Assoc., 1913, lx., 957.

MEDICAL ARGONAUTS

WHO has not been pricked by the words "Round the World"? They are the lost pibroch, calling to mind a cap tossed over windmills, ships, spices, titanic flowers, pigmies, and tropic dark, or continents of ice drifting below the northern lights. That a band of more than 130 doctors should respond to that call was surely an adventure of which not only the British Medical Association, but the whole profession can be proud. And if, in the account of their voyaging just published,[1] Dr. S. Watson Smith, the chronicler, attends firmly to the facts, that is just his scientific moderation; his spirited quotations from "The Ancient Mariner" hint at his leaping pulse. All the same, one cannot help wishing, sometimes, that he would share his emotions with his readers. What necromancers, for example, compose the medical societies of places darkly named Thunder Bay, Medicine Hat, and Moose Jaw, Sask.? And what stirred in him when, exploding the reputation of stout Cortez, he beheld "the Atlantic and the Pacific Oceans meet through an unbroken sheet of water." Did he merely decide that the Atlantic wasn't so frantic and the Pacific wasn't what it's cracked up to be? He does not tell us, but he does give us the story of friendships made or renewed across the breadth of Canada, of the islands of Hawaii where every doctor, upon arrival, was wreathed in flowers, and of a welcome in Australia so warm and generous that it has already become a legend. Then begins the journey back by way of Ceylon, the Red Sea, Cairo, and the Mediterranean, until the *Rajputana* casts anchor at Tilbury, and the voyagers step ashore laden with the treasure of three months' unforgettable experience.

The book must have a special significance for those who made the journey, for they will be able to read personal adventures between the lines; but the rest of us can catch a little of the glamour from the photographs which various members of the party have contributed; here we can see the koala bears, the pearl fishers, the giant anthills, temples, harbours, pyramids, cobras, and dancing girls to which the text so sedately refers. Some of the travellers went upon excursions from the main route, and accounts of these appear in an appendix. No doubt Dr. Watson Smith is right in suggesting that this journey has had an imperial as well as a medical significance. In one particular it has already served an important function: at the annual dinner, held at Melbourne, the Right Hon. Earle Page, Minister of Commerce in the Government of Australia, said that he would like to see founded a Federal medical research endowment fund, as a memorial of the visit; and in response to this suggestion the Federal Government has already taken steps to establish such a fund.

[1] The Chronicle of the World Tour of the British Medical Association. 1935. By S. Watson Smith, M.D., F.R.C.P. Edin., M.R.C.P. Lond.

CARDIFF ROYAL INFIRMARY CENTENARY.—The centenary of this hospital is to be celebrated next June and a committee has been chosen to make plans for a publicity campaign.

ANNOTATIONS

TUBERCULOSIS IN PARENTS AND OFFSPRING

WHETHER tuberculous parents have more than their fair share of tuberculous children, and, if so, for precisely what reason—inherited diathesis, exposure to a higher degree of infection, common environment—are questions of everyday interest. From an analysis of records of persons suffering from tuberculosis in Belfast, Stocks and Karn found[1] that there was an excessive rate in the children of affected parents, that it was much more pronounced when both parents were attacked than when only one was, and more distinct when the mother was affected than when the father was the sufferer. By somewhat mathematical-statistical methods they concluded that inheritance rather than increased risk of infection was the explanation of these differences. Further information on this point has recently been published by Raymond Pearl,[2] extracted from the family history records in the department of biology of the School of Hygiene and Public Health, Johns Hopkins University. The sample utilised contained 27 families in which both parents were tuberculous, 88 in which only the father was tuberculous, 122 in which only the mother was tuberculous, and 327 in which neither parent was tuberculous. In the first group there were 115 children of whom 35·7 per cent. were tuberculous, in the second 372 of whom 14·0 per cent. were tuberculous, in the third 492 of whom 13·0 per cent. were tuberculous, and in the last 1501 of whom only 8·3 per cent. were tuberculous. Taking all the offspring together, 11·3 per cent., or roughly 1 in 9, were tuberculous, which Pearl thinks is a reasonable figure considering what is known of the prevalence of active and recognisable tuberculosis occurring in Baltimore at the time these records were made.

These results confirm, it will be noted, the excessive rate observed by Stocks and Karn in children with both parents tuberculous, but not their observation of a higher incidence when the mother rather than the father was affected. Pearl concludes that the regular increase in the offspring percentage incidence as the amount of parental tuberculosis increases seems impossible of rational explanation on any other basis than that of hereditary influence. Increasing chance of massive contact infection in the home he dismisses on the grounds (1) that the chance of clinical tuberculosis resulting when both parents are tuberculous is nothing like quantitatively double what it is when only one parent is affected, while the recorded offspring incidence is more than double; and (2) it does not seem probable that a child with one parent in the home actively tuberculous is only 1·7 times (the ratio of 14 to 8·3) as likely to develop clinical tuberculosis as a child with no tuberculous parent. The risk, he thinks, is probably greater than this. If that is so, and the children of tuberculous parents also inherit an unfavourable diathesis, as he argues, it is difficult to see how Pearl accounts for the 1·7 ratio. It appears that there ought to be a very much greater excess than this amongst the children with a tuberculous parent.

The question of environment—apart from family infection—Pearl does not discuss. It seems possible that families in which both parents are tuberculous either belong, on the average, to a lower social class than those families which have neither parent tuberculous, or are, owing to the parents' illness, less well provided with the necessaries of life. If such a difference of environment exists this might lead to the more ill-nourished child of the tuberculous parent succumbing more readily to the infection, and this without invoking an inherited diathesis. As with most human characteristics the truth probably lies between the two extremes; inheritance and environment may both play their parts.

[1] Annals of Eugenics, 1928, iii., 84.
[2] Zeits. f. Rassenk., 1936, iii., 301.

BAD GASTEIN IN FÊTE

A CORRESPONDENT writes: "The last week-end in June saw the celebration of the five hundredth anniversary of Bad Gastein as a spa and health resort. The programme, faithfully and merrily carried out in spite of gloomy weather, provided a charming spectacle. The procession which passed through the impossibly picturesque town in a slow and orderly march was over a mile long, and while no doubt it included representatives of official standing and civic or sanitary circles, their sober presence was entirely submerged in the brilliant waves of costume and emblems supplied by the inhabitants of the neighbouring small towns and villages. Banners and armorial signboards competed with each other in scarlet, green, and yellow. The multi-coloured costumes—robes, caps, and girdles adorned with gold and silver filigree—had the charm of appositeness so generally wanting in organised processions, because the fancy dresses were not for the most part specially contrived for the occasion but retrieved from cupboards and chests where they had reposed for years, being only withdrawn when the call for national display had a reason. Thus the long moving line did not suggest so much an arranged pageant as a picture of mediæval life.

"A *Festschrift* published in association with the proceedings supplied, in a series of chapters, full information on the therapeutics of the waters, giving cumulative evidence as to the value of the Bad Gastein régime in many of the conditions where spa treatment is recognised as valuable; here stress was laid on the convenience of the arrangements by which the waters, at assorted strengths and temperatures, are delivered in pipes to the hotels, patients thus being spared irksome transport to a central institution. A special contribution to the *Festschrift*, written by Dr. Otto Gerke, described very clearly the way in which this house-to-house supply is effected, while giving at the same time an interesting story of the development of the spa. The recognition of Bad Gastein as a health resort is dated from 1436, when the Emperor Frederick III. declared himself to be relieved of his troubles, the exact nature of which seems not to have been ascertained, by the use of the waters. From that time forward important visitors have recorded cures of rheumatic pains, gastric troubles of various sorts, anæmia, and general exhaustion, while doctors and laymen have written in praise of Bad Gastein, as having proved serviceable to their patients and friends. That intriguing person, Paracelsus, who is quoted at some length by Dr. Gerke, was deputed by the Prince-Bishop of Salzburg to inquire into the reason for the efficacy of Bad Gastein waters, and in attributing their powers to some qualities escaping analysis, seems to have had a premonition of the influence of radium. Dr. Gerke discusses the problems presented by radioactivity in the waters of various spas, and Bad

Gastein in particular, without dogmatising too much on a subject about which much remains to be learned; but he suggests that the invigorating effects of Bad Gastein as a health resort have their origin largely in the fact that the whole air of the narrow ravine, down which the main stream plunges directly among the houses in abrupt cascades, is impregnated with the spray of the torrent, so that even those who are not taking a formal bath of so many minutes and of an allotted strength are receiving an informal air-bath throughout day and night. It is to this fact that he attributes the gradually energising effects of a sojourn at Bad Gastein, which have earned for the spa its popular reputation, that it is a 'good place for old people,' a reputation otherwise expressed in the Austrian description of the treatment as 'a Christmas cure,' meaning that the invigoration derived from summer and autumn visits are fully appreciated when the trials of winter come."

"DE GENERATIONE ANIMALIUM" ANALYSED

HARVEY'S fame rests secure on the "De Motu Cordis." His longer work, the "De Generatione Animalium" [1] has remained comparatively unnoticed. The professor of anatomy at Stanford University has found that very few of the Harveian orators have more than mentioned it; few of them have made it the subject of detailed comment, nor has it received adequate appreciation elsewhere. Prof. Meyer has therefore examined it critically, and in spite of difficulties has succeeded in producing an interesting account of the work. There are various sources of difficulty: one which Harvey himself recognises is the phraseology. He says: "He who enters on this new and untrodden path, and out of the vast realm of Nature endeavours to find the truth by means of anatomical dissections and experiments, is met by such a multitude of facts, and these of so unusual an aspect, that he may find it more difficult to explain and describe to others the things he has seen, than he reckoned it labour to make his observations: so many things are encountered that require naming; such is the abundance of matter and the dearth of words." There is a further and more serious difficulty: the work contains contradictions and entanglements of ideas, in marked contrast with the clarity and logical sequence of thought which characterise the "De Motu Cordis." It is probable that Harvey was himself not unconscious of this imperfection, and that the knowledge was at least in part the cause of his reluctance to publish the work.

The treatise was not the work of his old age, though he was 73 the year it was published. He had been investigating the subject ever since his time at Padua, when he had taken as his master Fabricius, who had written on the development of the chick. For many years he had made experiments and observations, and at some period he had arranged his material in a series of "exercitationes" and prefaced them with an introduction, in which he discussed the methods of acquiring knowledge. Prof. Meyer finds this introduction "rather tedious reading," but all will not agree with him. It is at least a profession of faith on Harvey's part, written in the language and the spirit of the true researcher. He then records his observations and experiments in a series of numbered chapters, many of which are even now of the greatest interest. To these he added what he called "additamenta" on parturition, the fœtal membranes, and on conception. The whole is inconclusive and thus probably disappointing to one who was convinced that he had been working on the right lines.

The "exercitationes" are full of accurate observations, but contained too many of those vain speculations which Harvey himself condemned. Hence arise contradictions and obscurities of thought which make it hard to ascertain what Harvey himself believed. The famous dictum "Omne vivum ex ovo" does not occur anywhere in that precise form, though it is implied in several passages—e.g., "Ovum esse primordium commune omnibus animalibus," and also in the inscription on the egg "Omnia ex ovo" which appears in the frontispiece to the first four editions. Yet in other passages the dictum is contradicted, for Harvey says elsewhere that "some animals are born of their own accord, concocted out of matter spontaneously or by chance." In other words he accepted, however reluctantly, the doctrine of spontaneous generation, and made no attempt to reconcile the contradictions. In the "De Generatione" Harvey in fact records his failure. Willis, writing an introduction to his translation in 1847, truly says: "On the doctrine of the circulation the dawn had long been visible: Harvey came and the sun arose. On the subject of animal reproduction all was night and darkness two centuries ago: and though the light has still been waxing in strength since Harvey wrote, it is only in these times that we have seen it brightening into something like the day." "A failure, it is true," says Prof. Meyer, "but nevertheless the best treatise produced up to that time."

[1] An Analysis of the "De Generatione Animalium" of William Harvey. By A. W. Meyer, Professor of Anatomy, Stanford University. Stanford University Press. London: Humphrey Milford, Oxford University Press. Pp. 167. 13s. 6d.

FRACTURES OF THE LATERAL CONDYLE OF THE HUMERUS

THE isolated fracture of the lateral condyle of the lower humeral epiphysis is a lesion of childhood. It is not very common, but is of note on account of the considerable difficulty of reduction and the unsightly deformity in which non-reduction results. The cause of the fracture is nearly always a fall on the arm or hand; but, as it is not usually possible to extract from a child a clear account of how he has fallen, the exact mechanism is not certain. In all probability the elbow is forcibly adducted while in a position of imperfect extension. This may result in some cases from a fall on the outstretched hand. Dr. Philip D. Wilson [1] describes the typical displacement as a rotation of the separated fragment outwards, downwards, and backwards. The full displacement is due to the pull of the extensor muscles attached to the lateral epicondyle and, as is pointed out by Wilson, this pull can only act at all powerfully when the adduction has been so forcible as to tear the muscular aponeurosis which ordinarily confines the extensors. The injury, as demonstrated in the radiogram, is mainly an epiphyseal separation, but there is always a thin splinter of bone torn from the metaphysis, chiefly from its lateral border and posterior aspect. The fracture line runs from the lateral side, starting about ¼ in. above the epiphyseal line, to split the articular cartilage and enter the elbow-joint in the region of the trochlea. The fragment separated is triangular in shape. There is a very definite age-limit for this fracture; it occurs between the age of 3 years, when the centre first appears for the capitellum, and the age of 13, when fusion takes

[1] Jour. of Bone and Joint Surg., April, 1936, p. 301.

place between the various elements of the lower epiphysis. Fusion of epiphysis and metaphysis has already commenced by the latter date, so that, after 13, fracture is much more likely to occur than epiphyseal separation.

With a slight degree of displacement, treatment with the elbow in flexion, as advocated for most injuries around the elbow-joint, may suffice. Any considerable displacement of the condyle results in an apposition of the smooth articular surface of the capitellum with the fractured surface of the humerus, and, without reduction, non-union is a certainty. No individual surgeon is likely to gain a large experience of such reduction. Wilson has met the fracture 11 times in a series of 439 cases of fractures and dislocation around the elbow. His impression is that attempts at non-operative reduction are a waste of time. He would perform open reduction in every case of definite displacement. A lateral incision exposes the site of fracture. The tear in the aponeurosis will probably be obvious, and through it a forceps is inserted to pull on the ligamentous and muscular attachments to the condyle and draw it up. The fragment is replaced by means of the fingers, and may be held in position by suture. Wilson uses a silk suture passed inferiorly through the ligaments and muscles on the condyle and above through a hole drilled in the lateral supracondylar ridge. The effects of non-reduction are an increasing degree of valgus deformity at the elbow, and, in a certain number of cases, the late development of ulnar nerve paresis. Flexion and extension and pronation and supination may fully recover, and even with a quite definite deformity the strength of the limb may be unimpaired. Interference with the growth of the metaphysis is not a usual feature, although owing to the non-union of the lateral condyle the growth is irregular.

CHEST TROUBLES AFTER ANÆSTHESIA

THE ætiology of chest complications after operation is still often a controversial question. There are some who believe that these sequelæ have nothing at all to do with the anæsthetic, but are brought about entirely by the site, nature and severity of the operation. Others maintain that ether is more irritating to the air passages and is actually more often followed by chest complications than other agents. The work of W. Pasteur on massive collapse of the lung must not be lost sight of in connexion with post-operative chest conditions; some cases may certainly be explained by the partial paralysis of the diaphragm and lack of movement on the affected side of the chest. A statistical inquiry carried out by E. A. Rovenstine and Ivan B. Taylor into the sequelæ of 7874 anæsthesias at Wisconsin Hospital[1] does not bring to light any new factor or explanation; it does provide instructive confirmation for some accepted views. For instance, that the presence of any respiratory tract affection in the patient before operation is a potential danger. The authors find, too, that there is a seasonal variation associated with the prevalence of respiratory diseases in the population outside the hospital. For this reason it was found advisable during months with a high incidence of respiratory infections to omit certain operations of convenience, particularly plastic operations on infants. The influence of the particular anæsthetic agent was not found by the authors to be important, but this is not true of "anæsthesia technique." The degree of narcosis affected the percentage of complications, and when spinal anæsthesia was used the number of complications was reduced by half when the action of the intercostal was not interfered with and rib-movement was not abolished. The most striking influence on respiratory complications was shown by the duration of operation. Operations of an hour or less had a morbidity less than the average for their group, and the percentage of complications following operations lasting two hours was more than three times that of the one-hour series.

[1] Amer. Jour. Med. Sci., June, 1936, p. 807.

THE SURGICAL TEMPERAMENT

Is there a surgical temperament? Prof. O. Lambret answers[1] the question in a pleasantly "debunking" spirit. The surgical temperament, he thinks, no longer amounts to much. Looking round at his colleagues, he can find among them no common factor to serve as a basis for a definition. In the early days when surgery, such as it was, demanded rapid decisions and quick dramatic operations without the aid of anæsthetics, surgeons were indeed "seigneurs," a source of gratitude and wonder to mankind. If there was ever a surgical temperament it is among these pioneers of surgery that one would expect to find it, but "ils différaient terriblement les uns des autres." Looking back 40 years, Prof. Lambret recalls some of the great surgeons of his youth; the solemn Péan, floundering amid a forest of artery forceps, Doyen with the spade-like fingers, Tuffier who modelled himself on Doyen but surpassed him in neatness and elegance, and Terrier, least brilliant of the four, whose methods, however, have survived. Nowadays, says Prof. Lambret, surgical technique has become largely stereotyped. Your modern surgeon is trained and equipped for emergencies. When a danger arises . . . "un doigt le jugule . . . une pince . . . une ligature . . . le danger est passé." The whole affair is reduced to the level of a skilled handicraft. A tumour may be removed with more or less dexterity, but thanks to anæsthesia and asepsis the end-result will not be far different. It is true that some surgeons are better than others but that is true of every craft; the superiority is only relative, a matter of degree. Prof. Lambret thinks that 80 per cent. of humanity could be made into competent surgeons, but if they become business men, engineers, lawyers, mechanics, or generals, careers for which nobody thinks a special temperament necessary, they will do just as well. But, he adds, the surgeon of the future must be more than a clinician; he must be a biologist in the widest sense. He who has to work with the organs and tissues of the human body must be conversant with the laws which govern them.

[1] L'Echo Médical du Nord, 1936, v., 1.

DERMATITIS EXFOLIATIVA FOLLOWING DINITROPHENOL

THE fatalities hitherto attributed to dinitrophenol and -cresol appear to have been due either to overdosage, or to hypersusceptibility, or a complicating agranulocytosis. The usual symptoms of intolerance are headaches, lassitude, tachycardia, palpitation, vertigo, and so forth, and toxic hepatitis with jaundice, maculopapular eruptions, urticaria, purpura, and extreme pruritus. These symptoms closely resemble those which have been reported occasionally as following the exhibition of N.A.B. or its substitutes, and are not unlike the occasional ill-effects ascribed to atophan and other drugs of the benzene-ring type. It is therefore not astonishing to read of a case of exfoliative dermatitis, of which

many have been recorded in the course of modern antiluetic treatment by the arsenobenzol series, following medication with a proprietary preparation Slim, said to contain dinitrophenol.[1] A woman, aged 33, had suffered from severe itching for eight months, when in November, 1935, she was admitted to the wards of the Cleveland Hospital, U.S.A. She had been taking 2 grains of dinitrophenol daily —i.e., 0·13 grammes. She had taken 1·8 grammes in all over a period of two weeks. The eruption associated with the itching continued to spread until it was generalised, about a month after admission, and assumed the classical appearance of exfoliative dermatitis. She appears to have remained thus afflicted for a further three months, and a photograph taken 10½ months after the commencement of her illness shows how severe and extensive was the condition, still present though stated to be "slightly improved." Other symptoms—e.g., polyneuritis and incipient bilateral cataracts—which have been recorded in previous cases of poisoning by this exceptionally virulent drug, were also present, and must have rendered the patient's condition well-nigh unbearable. As with many complex drugs and extracts, a predisposition or specialised hypersensitivity must be present in certain persons to account for these violent reactions to substances which are innocuous to others. Hair-dyeing by paraphenylene diamine and the manufacture and retailing of dyed furs are examples of the use of substances which would certainly be prohibited if they gave rise in general to the acute dermatitis which they produce in certain susceptible individuals. It is not known what proportion of people are hypersensitive to dinitrocresol, but the recorded fatalities and the appalling picture described above should suffice to prevent its use except under the most careful supervision in the most intractable cases of obesity.

ORDER AND LIFE

THE apparent cleavage between the inorganic and the biological sciences is naturally dissatisfying to those who feel that it is the business of science to make the universe as a whole intelligible. The object of the mechanist has been to deny this cleavage and to reduce biology to a department of classical physics and chemistry, whereas the vitalist, showing a greater understanding of the essential nature of living matter, has maintained that the cleavage is fundamental and irreducible by scientific methods. The main thesis of Dr. Needham's Terry lectures[2] to Yale University is that we are now coming within hailing distance of a satisfactory synthesis of these two groups of sciences. It is not however to be effected upon mechanistic lines, nor is the essentially "organised" nature of living matter, stressed by the vitalists, to be ignored. The possible basis of a rapprochement is coming from a somewhat unexpected quarter. Those branches of physics which deal with colloidal and crystal structure are becoming faced with problems of form and organisation which were previously thought to be confined to biology and which cannot be solved on strictly mechanistic principles. The importance of these problems in relation to biology has of course been suggested before now, but recent research is beginning to make the connexion appear a little less speculative. As Dr. Needham points out, the paracrystalline state exhibited by liquid crystals "seems most suited to biological functions as it combines the fluidity and diffusibility of liquid while preserving the possibilities of internal structure characteristic of crystalline solids." Liquid crystals can also possess "directional properties not found in gels." Since it is certain that many constituents of protoplasm can exist in these states, we have a possible basis for the most perplexing and fundamental of biological phenomena—the existence of organised structure in an apparently homogeneous fluid. X ray analysis of crystal structure, recently applied with success to hair and fibres, is a method which might be used to investigate the structure of protoplasm. Though the technical difficulties may prove very great, it has the advantage that it does not entail the destruction of the organised living condition. There remain of course many gaps to be filled even in a theoretical scheme of synthesis along these lines, and this method of attack may prove as abortive as many others. But Dr. Needham manages to inspire in his readers a great curiosity about further developments in this direction.

[1] Hitch, J. M., and Schwartz, W. F.: Jour. Amer. Med. Assoc., June 20th, 1936, p. 2130.

[2] Order and Life. By Joseph Needham, Fellow of Gonville and Caius College, Cambridge, and Sir William Dunn Reader in Biochemistry, University of Cambridge. London: Cambridge University Press. 1936. Pp. 175. 8s. 6d.

CARBON MONOXIDE TOLERANCE

THE experiments made by Dr. Esther M. Killick[1] on acclimatisation to carbon monoxide are of both practical and theoretical importance. At approximately weekly intervals for over three months she exposed herself in a closed chamber for several hours at a stretch to a concentration of 0·01 to 0·05 per cent. of carbon monoxide, and measured the proportion of carboxyhæmoglobin produced in the blood on each occasion. Shed blood, exposed in vitro to air containing carbon monoxide, will always take up a predictable amount of the gas, the hæmoglobin being divided between oxygen and carbon monoxide in strict accordance with their concentrations and relative affinities for hæmoglobin. At the end of her experiments, Dr. Killick found that her blood contained relatively less carbon monoxide than a sample exposed in vitro to the same concentration of the gas as she had been breathing. At the beginning of the experiments this difference did not exist, and it is clear that the body when "trained" to do so can stand concentrations of carbon monoxide in the atmosphere to which it would ordinarily succumb. The practical importance of this is obvious: it at once relieves us of anxiety regarding the increasing amount of carbon monoxide liberated into the air of cities and offers the opportunity for some degree of prophylaxis to those engaged in certain dangerous industries. The theoretical implications are interesting. This is essentially a biological adaptation, being slow in attainment and taking about 18 months to disappear, and must be due to a modification in the normal function of some cells in the body. The most obvious explanation—that of a change in the properties of the hæmoglobin—cannot be upheld because this behaves normally in vitro. It may be that the tissues in general learn to oxidise carbon monoxide, but with the blood in the lungs exposed to a constant concentration, and always returning to the systemic circulation fully charged, an extremely active metabolism of carbon monoxide would be necessary to reduce its concentration in the systemic blood and to keep it low. It must be conceded that the current physiological conception of the alveolar epithelium of the lungs as a passive membrane is

[1] Jour. Physiol., 1936, lxxxvii., 41.

again thrown open to doubt. A simple and attractive explanation would be that the alveoli acquire the property of resisting the diffusion of carbon monoxide, while still freely allowing that of oxygen, the net result being that the blood itself is in reality exposed to a lower pressure of carbon monoxide than that obtaining in the outside air. Alternatively, one could suppose that the carbon monoxide diffused freely into the blood, but that oxygen diffused in more rapidly than normally, thus capturing more than its share of hæmoglobin. Haldane's belief in the power of the lungs to "secrete" oxygen inwards when necessary rested largely on experiments with carbon monoxide, and these are discussed in detail in his book on respiration.[2] Dr. Killick wisely refrains from expressing an opinion on this controversial subject, and indeed it would be premature to do so. We should like to know the composition of the blood in the left side of the heart of animals subjected to a similar experiment.

ROYAL SOCIETY: MEDICAL RESEARCH APPOINTMENTS

THE council of the Royal Society at their meeting last week approved plans for medical research on malaria and on nutrition in India, involving a total expenditure of over £8000 in the next five years. Colonel J. A. Sinton, V.C., has been appointed to investigate certain aspects of malaria at the Horton centre. Another series of investigations on malaria, in conjunction with the London School of Hygiene and Tropical Medicine, provides for a study of mosquitoes in the tropics and Dr. Curjel Wilson has been offered a research appointment to enable a survey of nutritional conditions in India to be undertaken.

The council also appointed Dr. John McMichael as the first holder of the E. Alan Johnston and Lawrence research fellowship in medicine. This fellowship was founded in the spring of this year at a stipend of £700 per annum, in addition to superannuation allowance, by means of funds available to the Society from bequests under these two names. We are informed that 17 candidates applied for the fellowship and that of the 4 selected for special consideration every one would have been appointed had four fellowships been available. The council regard this field of applicants as a strong indication that candidates of high merit are available for full-time research posts in medicine. The successful candidate, Dr. McMichael, will work at the Edinburgh Royal Infirmary on the pathology of heart failure.

SIGHT IN INDUSTRY

A SHORT report has been issued by the National Ophthalmic Treatment Board[3] on an investigation undertaken to determine the value of systematic medical care for the eyes of the working population. An inquiry was made with a view to discovering the extent to which employers generally insist on preliminary and periodical examinations of the eyes. In answer to a questionnaire, replies were received from over 400 employers, the number of employees concerned being over a million. It was ascertained that 68 of the firms concerned, with 800,000 employees, do actually require prospective employees to undergo an eye examination before engagement. More than half this number are employed in the transport industry where a high standard of vision is enforced, but they are closely followed by large firms engaged in the manufacture of food, chemicals, and tobacco, the textile, dyeing, and coal-mining industries, public utility services, wholesale and retail distribution of goods, oil refining and distribution. On the other hand the majority of employers in the printing, light engineering, and clothing trades do not appear to take measures to ensure that their employees have good sight. Many of the employers, however, who do not insist on a preliminary or periodical examination do give special encouragement to their employees to secure expert advice in the early stages of suspected defective vision, and it is satisfactory to learn that of the 68 firms who insist on a preliminary eye examination only 14 make use of the services of sight-testing opticians for this purpose. In the majority of cases the eye examination is conducted by the firm's medical officer, while others utilise the services of an ophthalmic medical specialist, either by private arrangement or with the Board's assistance. So far as the Board is aware this survey is the first of its kind to be undertaken in this country on a large scale. It is claimed that a more complete investigation would demonstrate to employers that poor sight means poor work and that proper arrangements for meeting the situation would be amply repaid by greater efficiency, an improvement in the general health and well-being of the workers, and a marked reduction in the number of accidents.

[2] Haldane, J. S., and Priestley, J. B.: Respiration, Oxford, 1934.

[3] From the Board at 1, High-street, Marylebone, London, W.1.

THE third International Conference on Social Work opened in London on Monday at Bedford College, Regent's Park. Delegates have been sent from almost every civilised country and over a thousand members are attending the conference. In addition to the general sessions, five commissions are discussing the special fields of health, education and recreation, material welfare, social adjustment, and unemployment. The health section, of which we hope to give some report, has Prof. W. W. Jameson as chairman and Dr. R. H. Bolton as secretary; it is considering the whole field of social relationships in relation to the health problem, and the subject is being introduced by Dr. R. Hazemann of Paris. The conference closes to-day (Friday).

INDEX TO "THE LANCET," VOL. I., 1936

THE Index and Title-page of Vol. I., 1936, which was completed with the issue of June 27th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

EPIDEMIC OF GASTRO-ENTERITIS IN SURREY.—A widespread epidemic of gastro-enteritis has been reported from several districts in Surrey during the early part of this month. The districts affected are Carshalton, Sutton, Cheam, and Morden, and part of Coulsden and Purley, Beddington, Wallington, and Ewell. The distribution has been found to follow the distribution of the water-supply and has been traced to a well polluted by *B. coli* and other organisms at Cheam. The water company concerned have taken steps to chlorinate the water and it seems likely that no more new cases will occur. The epidemic took the form of nausea, a slight degree of vomiting, and pain in the abdomen followed by diarrhœa. The attacks lasted some 12–16 hours, and the children among those affected were mostly back at school 48 hours after the first symptoms had occurred. The only case which ended fatally was a man of 76 who died after an attack of sickness and diarrhœa which also affected two of his household. At the inquest Dr. D. R. Murray said that the cause of death was senile atheroma aggravated by gastro-enteritis of unknown origin.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CVIII.—PROGNOSIS IN GONORRHŒA IN THE MALE

AT the outset of an attack of gonorrhœa in the male three abnormal factors, concerned mainly with the seed or the soil, may powerfully affect prognosis.

ABNORMAL FACTORS AFFECTING PROGNOSIS

The first is that one sometimes finds cases in which the organism is obviously very virulent, for after seeing several of the same type, and discovering they have all been derived from the same source, one must conclude that it is the organism which is the potent factor. Such strains are usually imported from abroad, are seen in seaport towns, and require several intermediate hosts before they become attenuated to the strength of the native variety.

The second abnormal factor in prognosis is that there appear to be men who are almost insusceptible to gonorrhœa. Such a man will present himself with all the symptoms of a mild catarrhal urethritis, and to one's surprise the smear taken shows gonococci present. The usual prognosis is then made of two weeks' active discharge followed by several weeks of gleet. Instead of this however the whole condition clears in a week, and remains permanently clear, clinically and bacteriologically. The surgeon naturally flatters himself on the success of his treatment, until the same patient comes back to him in say a year or so with another attack, and exactly the same thing happens again—a positive smear or culture clearing up without any complications, and with the same rapidity. When this happens in the same patient a third or fourth time, and possibly a companion of the patient taking the same risk with the same donor develops a typical acute attack of florid gonorrhœa, the surgeon is reluctantly forced to the conclusion that not his skill in treatment but the vis medicatrix naturæ has been the real cause of cure. Cases of this type occur in approximately one in five thousand patients.

The third abnormal condition met with is that some men have such low resistance to the organism that a few days after infection inflammation spreads relentlessly to the prostate, trigone, or epididymis, and no line of treatment seems to be able to prevent this, even when the likelihood of such a result has been anticipated from experience of the same patient's history in a previous attack. Cases of this type occur in about one in five hundred.

When therefore a patient comes before one with a recent attack, it is advisable to inquire carefully first of all into the source of infection, and secondly into any history of a previous attack, as from this one may learn the probable duration and course of the fresh infection one is called upon to treat, and can make a reasonably accurate prognosis accordingly. Having thus cleared the ground one may now consider the normal conditions.

PROGNOSIS UNDER NORMAL CONDITIONS

In an attack confined to the anterior urethra, if chordee or cowperitis does not occur and the usual treatment is carried out, active discharge should stop in about a fortnight, the urine should be clear but still contain threads at the end of a month, and the threads should have disappeared in another month. The patient then should be bacteriologically negative at the end of the third month, and serologically negative on an average at the end of the fourth month.

COMPLICATIONS

When infection spreads to the *posterior urethra*, this comparatively rosy picture is completely upset. It is stated that at some clinics the proportion of spread to the posterior urethra is about 60 per cent. This is an unnecessarily high average, and one feels it must be due to faulty irrigation, for there is no doubt that much too much dependence is placed in these days on the efficacy of large, frequent, and complete lavage—meaning by complete lavage irrigation into the bladder. The fault does not lie in lavage per se. Lavage as done by an expert, and lavage as performed by a nervous clumsy patient on himself in a clinic with 20 or 30 men around him, is an entirely different matter. And it would therefore seem advisable when dealing with a fresh infection to limit the enthusiasm of the patient to washing out his anterior urethra, for the first ten days or so at any rate, before asking him to attempt the much more intricate manœuvre of washing out his bladder. This is a matter of the greatest importance for prognosis, as attacks spreading to the posterior urethra are almost certain to involve the prostate, vesicles, or epididymes.

Epididymitis, generally single, is the more usual complication. The other testis may become involved later, but it is unusual for acute epididymitis and acute prostatitis to occur at the same time. Acute epididymitis by virtue of the temperature produced and the sharpness of the attack may cut short the duration of the active discharge, stopping it absolutely for a week or so and then rapidly attenuating it. But any attack of epididymitis means that a chronic prostatitis is left, and consequently that the question of subsequent sterility will have to be faced later on.

When a synovial membrane or even a tendon sheath becomes inflamed in the course of a gonococcal attack, we are dealing with a systemic condition, and the prognosis is correspondingly more grave, since whenever there is a *gonococcal synovitis* there is always an accompanying mild endocarditis, generally masked by the acuteness of the synovitis but present none the less, and liable to produce a definite diminution in the expectation of life. Conversely, when a frank endocarditis is present two or more joints are always involved, but one's anxiety is so fixed on the heart that the joints appear relatively unimportant. Luckily *gonococcal endocarditis* and *gonococcal pneumonia* are comparatively rare in this country, being found as a rule in women admitted to hospital in the last stages of destitution. Both conditions are therefore rare in the male, except in those of very poor physique. The immediate prognosis in gonococcal synovitis is concerned with the risk of permanent disability, for the rôle of the gonococcus is to produce fibrous adhesions and contractions, narrowing in the urethra, sclerosis in the epididymes and prostate, and adhesions in the joints and tendons. If the synovitis is of the acute serous or chronic hydrops articuli type, the functional after-results as regards movement are good. But if the inflammation is of the acute fibrinous type, with severe pain and little swelling, movements are much more liable to be restricted after the subsidence of the attack. Prognosis as to ultimate complete return of movement should therefore be guarded in this type.

When *gonococcal iritis* occurs it is generally confined to one eye, but when the acuteness of the attack subsides it is not uncommon for the other eye to light up, and when this occurs prognosis is correspondingly grave.

Stricture of the urethra is much rarer than it used to be owing, probably, to better treatment in the acute stages. It is uncommon to find it occurring until two to six years after the preliminary infection, and if properly treated should not affect the expectation of life.

Epididymitis, if double, may produce *sterility*, but makes no difference whatever to potency—indeed quite the reverse, for a man with an epididymis cut off by fibrous thickening of the globus minor and stenosis of the vas is in the same position as a patient who has had Steinach No. 1 operation performed on him.

There is a general belief that double epididymitis, like an attack of orchitis from mumps before puberty, causes sterility. It is usually true of the mumps cases, but it is not necessarily true of the others. Tests six months after the subsidence of an attack of double epididymitis may show azoöspermia, but if repeated every three months or so a gradual restoration of active spermatozoa is generally found to occur, and fertility eventually follows. And even if after two years or so no sperms are present it is still possible to implant the vas into the globus major and so, in some cases, to restore function. Spermatozoa have an extraordinary resistance to adverse surroundings. Semen can be fertile even when heavily contaminated with pus and gonococci, as is clear from the fact that women not infrequently become pregnant and get infected with gonorrhœa at the same time.

Prostatism.—Untreated chronic prostatitis produces a chain of symptoms which appear to be mainly psychic in nature, and are lumped together under the name "prostatism." The victim is usually a depressed man with neuralgic perineal pain and phosphaturia, or he may have a clear urine with flakes containing pus cells and some secondary organisms of low pathogenicity. The prostate, on examination, is found to be small and firm; but there are no symptoms of obstruction. Such patients appear never to develop enlargement of the prostate later, the one thing that can be credited to the condition. But they frequently complain of premature ejaculation, or develop prostatic neuralgia after intercourse, and this neuralgia is sometimes so severe as eventually to produce impotence.

COMPLEMENT-FIXATION TEST

The reaction of patients to the complement-fixation test may be of the greatest prognostic importance. When such a patient develops a marked positive C.F.T. inside the first month of an attack the prognosis is good, for it means that antibody formation has been actively stimulated. When a patient is clinically and bacteriologically clear his C.F.T. should still be positive for a month or so after cure. But the reaction ought to become less positive and eventually negative inside three months of clinical cure, if all is well; and if it persists in being positive a rigid search ought to be made for some focus hitherto unsuspected. When the patient has an obvious gonococcal infection, and the C.F.T. remains persistently negative, the prognosis is bad, particularly when metastatic lesions are present. No antibody is being made, and no fixation therefore occurs. It is in cases of this type that relapsing iritis persists, and increasingly frequent crippling attacks of arthritis tend to occur. Pyrotherapy now holds out hopes that such conditions can be overcome more readily than by the older methods usually employed; but the prognosis is never good unless one can stimulate antibody formation. Every form of treatment should therefore aim at this end.

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SPECIAL ARTICLES

THE UNEMPLOYMENT ASSISTANCE REGULATIONS

THE new draft regulations (H.C. 145, 2*d.*), designed to take the place of the rejected regulations of December, 1934,[1] were laid before Parliament by the Minister of Labour on July 9th.

GENERAL EFFECT OF PROPOSED CHANGES

The principal changes include an increase in a number of scale rates, the abolition of the special reduction for large families, and an adjustment in certain cases of the amount received to equal the present unemployment benefit rate. The provisions for rent are more pliable and can be adjusted in the light of local opinion to the circumstances of each area. The contributions to be made by ranking members of a household towards the support of their unemployed members are greatly reduced in amount and the group required to make substantial contribution has been narrowed. Under the existing regulations the married son of an unemployed man is, subject to his own responsibilities for his own dependents, treated equally with his unmarried brothers and sisters in relation to the support of his father. Similarly members of a household, though not immediate relatives of an unemployed applicant, were called upon to contribute substantially out of their earnings to the maintenance of the household. Under the new draft regulations the married children of an unemployed man and other members of the household except his children and brothers and sisters will, unless their earnings are high in relation to their direct responsibility, be called on to contribute to the household no more than they might reasonably be expected to pay if they were boarders. The proposals in the draft regulations are also more generous to the younger earning members of the household. Free school meals are no longer to count as an item to be deducted from the parents' relief. The total amount payable to an applicant may still not exceed the amount payable to him under insurance benefit. For the purposes of comparison the scale provisions of the existing and the draft regulations are reproduced here, the principal changes being italicised.

The alterations in the provisions, it will be seen, are all more favourable to the unemployed applicant and his household than the existing regulations, and the increased payments are to be made within four or five weeks after the draft regulations come into effect. The increased expenditure is estimated to be £750,000. Owing to the present anomalous position, however, large numbers of unemployed are now receiving more than they will

[1] See THE LANCET, 1935, i., 31, 48, 295.

OLD AND NEW SCALE COMPARED

PART I.—*Household of Two or more Persons*

	Existing. Weekly.	New Draft. Weekly.
(*a*) For the householder and the householder's wife or husband	24*s.*	24*s.*
(*b*) For the householder (where rate (*a*) is not applicable). male	16*s.*	16*s.*
female	14*s.*	*15s.*
(*c*) For each other member of the household aged 21 years or over—		
Male—First member	10*s.*	*10s.*
Subsequent member	8*s.*	
Female—First member	8*s.*	*9s.*
Subsequent member	7*s.*	
Aged 18 to 21 years—		
Male	8*s.*	*8s.*
Female	7*s.*	
Aged 16 to 18 years	6*s.*	
Aged 14 to 16 years	6*s.*	6*s.*
Aged 11 to 14 years	4*s.* 6*d.*	4*s.* 6*d.*
Aged 8 to 11 years	4*s.*	4*s.*
Aged 5 to 8 years	3*s.* 6*d.*	3*s.* 6*d.*
Under 5 years	3*s.*	3*s.*
(*d*) Where the household consists of only one child in addition to not more than two adults, the amount allowed in respect of that child shall be not less than 4*s.*	No change.	
(*e*) Where in any household there are more than five members, the total for that household shall be reduced by 1*s.* in respect of each member in excess of five.	*Provision deleted.*	

PART II.—*Applicant not a Member of a Household*

(*a*) Aged 18 years or over—		
Male	15*s.*	*15s.**
Female	14*s.*	
(*b*) Under 18 years—		
Male	13*s.*	
Female	12*s.*	

* *Subject to adjustment by way of increase or reduction to meet the circumstances of a particular case.*

RENT

Under the existing regulations adjustments are made in the allowance in respect of rent when the net rent is greater or less than the basic rent, which is 7*s.* 6*d.* if the scale rate for the household is 24*s.* to 30*s.*, and is increased or reduced proportionately if the scale rate is below 24*s.* or above 30*s.* The draft regulations provide that if the net rent actually paid is greater or less than a quarter of the scale rate for the household, an adjustment of the allowance may be made by such sum as appears to the Board's officer or, on appeal, to the appeal tribunal, to be reasonable.

do under the draft regulations. It will be remembered that the regulations set out by the Unemployment Assistance Board and passed by Parliament in December, 1934, were designed to give some degree of uniformity throughout the land in the scale of benefits, replacing the diverse scales of the local public assistance authorities, but before the regulations had come fully into operation a growing body of public dissent led to the passing of the "standstill" Act of February, 1935. The complicated double standard laid down in that Act has now been administered for 18 months; the unemployed applicant receives an allowance either according to the Board's regulations or according to the local authority scale, whichever is the greater.

A Year's Experience

In spite of these double standards some idea of how the draft regulations will operate can be obtained from the account of the working of the existing regulations during 1935 given in the Board's report recently issued (Cmd. 5177, 4*s.* 6*d.*). The organisation of the Board's service includes over 300 area and district offices with a staff of over 6000 persons, of whom the greater number had been temporary officers employed by the local authorities in dealing with transitional payments. There are 130 appeal tribunals. These figures are of interest in that the whole organisation, complete enough to ensure smooth running, was set up in six months. In order to avoid the friction and hardship which rigorous application of the regulations would entail, the Board endowed its district officers with considerable discretionary powers, where special circumstances existed.

SPECIAL CIRCUMSTANCES

These powers have been largely used, allowances above the normal provided for in the regulations being granted in over 20 per cent. of the cases, and are probably responsible for two conditions shown in the report. First, the work of the Board's officers has overcome much of the resistance first offered to it; second, the intimate knowledge of an applicant's home affairs which an officer acquires in considering individual cases has often enabled him to advise the applicant on matters apart from assessment of need. The reports of the district officers provide many examples of such advice given and accepted in friendliness. Fresh accommodation has sometimes been found, removal of sick persons to hospital arranged, and even some matrimonial disputes have been settled by the Board's officers. Liaison has also frequently been established between applicants or members of their household and diverse appropriate social services. Tuberculous suspects have been referred to dispensaries, expectant mothers to ante-natal clinics, and neglected children reported to the N.S.P.C.C. In these ways the Board's officers must have contributed considerably to the national health.

One most important single heading under which discretionary additions to scale allowances have been granted is that of extra nourishment required on medical grounds. Such cases are estimated at about 38,000. Usually these adjustments have been made, the report says, to meet the cost of extra or special food following upon doctors' certificates produced by the applicant in respect of some member of his household. Often the additional allowance amounts to only 2*s.* or 3*s.* a week for the purpose of procuring extra milk, eggs, and so on. In some instances, as for example in cases of diabetes, the extra cost of the special dietary may amount to from 8*s.* to 12*s.* a week. It is noticeable, however, in the district officers' reports that supplements for extra food have most frequently been given for four weeks only—the period covered by the doctor's certificate—even in cases of children stated to be in need of extra nourishment.

SCHOOL MEALS

The provision of meals for school-children has in some areas been a source of administrative difficulty to the Board during the year. The extent of the provision made by local authorities, the arrangements for selecting children, and the basis on which payment is required of parents or waived altogether vary widely from area to area. In the circumstances and in order to achieve reasonable equality between different households the Board decided to ignore meals provided for some pathological condition and also where the child (or children) obtained not more than 12 free meals a week all told. Otherwise an

adjustment in the allowance was enjoined at the rate of approximately 1*d.* a meal. This action met with considerable criticism, reflecting a feeling that the Board was in effect taking advantage of services provided out of local rates to save Exchequer payments or based on a belief that the practice was resulting in the withdrawal of children from school feeding. The report states that on inquiry these criticisms were found to be almost entirely without foundation, though individual cases occurred from time to time where parents withdrew children from meals worth at least 5*s.* a week in order deliberately to obtain a cash addition of 2*s.* 6*d.* to allowances.

The Board has endeavoured to assist applicants to make use of available training or occupational schemes. For this purpose no deduction is made in the assessment of allowance for agricultural produce produced on small holdings or allotments and consumed by the applicant's household.

The Family Unit

The chief criticism has been levelled at the existing regulations on the score of "breaking up the family." At present the scale allowance for the earning single members of a household offers them some inducement to live apart from these families, and this is known to have occurred in a definite but small number of cases. The draft regulations are drawn up with this difficulty in view. The report makes no mention of the possibility of a couple remaining unmarried in order to draw an extra 2*s.* In many cases where incompetence in a wife or drunkenness in a father has deprived other members of a household of part of their subsistence, the allowance has been largely paid in kind or paid in cash to some more capable member. In these ways the Board is assisting to keep their fundamental unit the household, which is so often the family, intact.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

A MEETING of the trustees of the Beit Memorial Fellowships for Medical Research was held on July 10th for the election of Fellows and other business.

Fellowships during the year 1935–36 were held by 24 full-time workers. The places of research for the Fellows have in process of time attained a much wider distribution than at the beginning of the Trust when its resources were used mainly to aid work in laboratories of the various schools of the University of London. Out of the 24 Fellows there are now 9 working in London, 6 in Cambridge, 4 in Edinburgh, 1 each in Oxford, Cardiff, Liverpool, and Aberdeen, and 1 studying pellagra abroad in South Carolina, where that disease is rife. The trustees have rarely made deliberate attempts to foster work in some field of inquiry chosen by them, and their policy has been rather that of selecting men for their ability and leaving them free to develop their own subjects of research in relation to medicine. But the trustees note with satisfaction that in the very active zone of advance in knowledge of the influence of internal secretions upon the reproductive organs, three of the chief workers in Great Britain are or have recently been Beit Fellows. Their experimental studies on animals are rapidly yielding the exact information about these intricate processes which is needed to guide clinicians in their attempts to control faults of development or function of the reproductive organs in the human patient. The honours gained by past or present Fellows during the recent year include a knighthood for services to medical education in Australia by C. S. Hicks (1923–26) and a fellowship of the Royal Society by E. B. Verney (1922–26). E. Hindle (1910–12, and senior Fellow in Tropical Medicine 1927–33) has been elected regius professor of zoology in the University of Glasgow; J. T. Irving (1926–28) to be head of the physiology department in the Rowett Research Institute, Aberdeen; H. P. Himsworth (1932–35) was awarded the W. J. Mickle prize fellowship for 1936 of the University of London; and J. S. Mitchell (1934–) has been elected to a fellowship in St. John's College, Cambridge University.

The following elections to Fellowships were made:—

Fourth Year Fellowships

ERIC STEPHEN HORNING, D.Sc. Melb. To continue his research on the cancer-producing effects of œstrogenic compounds, and on the possibility of producing tumours in vitro. At the laboratories of the Imperial Cancer Research Fund, Queen-square, London.

WILLIAM JOHN DANN, Ph.D. Camb., B.Sc. Sheff. To continue his study on the vitamin-B_2 complex in reference to the treatment of pellagra. At the Duke University School of Medicine, North Carolina, U.S.A.

Junior Fellowships

ISAAC BERENBLUM, M.D., M.Sc. Leeds. Riley Smith Research Fellow, Leeds University, since 1927. Proposed research: Mechanism of skin irritation by chemical substances in reference to their action as exciting or preventing the development of cancer. At the Dunn School of Pathology, University of Oxford.

DONALD DEVEREUX WOODS, B.A. Camb. First-class honours Nat. Sci. Tripos, Parts I. and II. Research Studentship, Trinity Hall. Proposed research: The metabolism of the anaerobic bacteria, and the phenomenon of adaptation in bacteria. At the Dunn Institute of Biochemistry, University of Cambridge.

ALBERT NEUBERGER, M.D. Wurzburg, Ph.D. Lond. Research Assistant to Prof. Rona, Berlin, 1932. Since 1933 engaged in research with Prof. C. R. Harington, F.R.S. Proposed research: Study of the carbohydrate group in proteins and its possible relationship to their antigenic properties in bacterial immunity. At the department of pathological chemistry, University College Hospital medical school, London.

CHARLES WILLIAM BELLERBY, M.A. Camb. Grantee of Medical Research Council and member of research staff of the department of social biology, University of London. Proposed research: The control of the reproductive cycle by the anterior lobe of the pituitary. At the laboratories of the department of social biology, University of London.

THOMAS WILLIAM BIRCH, B.Sc. Birm., Ph.D. Camb. Grantee of Medical Research Council since 1930 for research at Cambridge. Proposed research: Identification of the component parts of the vitamin-B_2 complex. At the nutritional laboratory, Cambridge.

LILLIAN MARY PICKFORD, M.Sc. Lond., M.R.C.S. Eng. Assistant since 1926 in department of pharmacology, University College, London. Proposed research: The part played by the posterior pituitary gland in the control of water excretion by the kidneys. At the pharmacological laboratory, University of Cambridge.

RICHARD JULIUS PUMPHREY, M.A., Ph.D. Camb. First-class honours Nat. Sci. Tripos, Part II. Rockefeller Fellow, University of Pennsylvania, 1934. Demonstrator in zoology, Cambridge University, 1935. Proposed research: The sensory physiology of insects, and the electrical response in the central nervous system to peripheral stimulation of afferent nerves. At the zoological laboratory, University of Cambridge.

THOMAS ARTHUR HOWARD MUNRO, M.B. Edin. Assistant physician, Royal Mental Hospital, Edinburgh, 1931. Assistant in psychiatry, Johns Hopkins University, U.S.A., 1932–33. Proposed research: The rôle of inheritance in

mental disorder. At the research department, Royal Eastern Counties Institution, Colchester.

All correspondence of Fellows and candidates should be addressed to Prof. T. R. Elliott, M.D., F.R.S., hon. secretary, Beit Memorial Fellowships, University College Hospital medical school, London, W.C.1.

MENTAL HOSPITALS

A SURVEY BY THE CHAIRMAN OF THE BOARD OF CONTROL

AT the annual meeting of the Mental Hospitals Association held at the Guildhall, London, on July 8th, Sir Laurence Brock, chairman of the Board of Control, presented a general survey of the position in mental hospitals.

PROPORTION OF MEDICAL STAFF TO PATIENTS

The number of patients under care in public mental hospitals on Jan. 1st last was, he said, 127,813—an increase on the previous year of 1711. No large additions were made to the accommodation during the year, and the aggregate shortage of beds increased to 2261. Some improvement may be expected this year with the opening of the new East Ham and Southend Mental Hospital at Runwell. No other new hospital is likely to be completed within the next two or three years, though the second part of Shenley has been begun and the plans of Margaretting are practically settled. We must therefore expect the position to become steadily worse in 1938 and 1939. There is nothing, however, alarming or abnormal in the increase in the numbers under care. As you know, the admission-rate is related not to the birth-rate at the moment but to the birth-rate 30, 40, or 50 years ago when the population was growing much more rapidly than it is now. We may therefore look for a slow but continuing increase in the mental hospital population for some years to come. The only thing which would check this increase would be a rise in the death-rate, which continued last year to be astonishingly low. This low death-rate is a testimony to the excellence of the medical and nursing care, and the good feeding of the patients. The physical condition of our patients is admirably cared for, but I wish that mental hospitals were sufficiently staffed to allow more care and time to be given to their mental condition. Our mental nursing service will compare with that of any country I have yet visited, and our doctors are, many of them, admirable, but they are sadly overtaxed. It is safe to say that few public mental hospitals in this country are adequately staffed on the medical side. I am at a loss to understand how any visiting committee can expect 3 doctors to look after the physical and mental welfare of nearly 1200 patients, and to do all the administrative work in addition. This is, admittedly, an extreme case, but few of our hospitals would compare in the proportion of medical staff with the best of the Dutch hospitals, and I can only suppose that this under-staffing is due to the fact that the nation as a whole has no more real belief in the possibilities of medicine than it has in the possibilities of education.

SHORTAGE OF BEDS

The aggregate shortage of beds, which amounted on Jan. 1st last to 2261, is not a serious percentage of the total hospital population, but these figures are, in reality, worse than they appear. The aggregate shortage is arrived at by setting surpluses against deficits. The total deficits of those hospitals which are overcrowded would, of course, amount to far more than the net shortage which I have already quoted. In other words, a net shortage in the aggregate of under 2 per cent. means much worse overcrowding in some hospitals. Then again the overcrowding cannot be evenly distributed. Some wards simply cannot be overcrowded beyond a certain point. There is an obvious limit to the extent to which, for example, you can overcrowd an epileptic ward. This means that other wards of more manageable patients are apt to get more than their fair share of overcrowding. Nor is this the whole story. If mental hospitals are full, cases needing active treatment inevitably continue to be kept in public assistance institutions. This is not mere theory. It was proved by a survey which we made of the Lancashire public assistance institutions, which indicated that there were at least 500 patients in these institutions who ought to have been under treatment in mental hospitals. Indeed, the gravity of the situation in Lancashire and Essex has compelled the Board to sanction the erection of temporary accommodation pending the completion of new hospitals. This is an expensive and unsatisfactory expedient. The situation will be largely remedied in the early 'forties, but, till then, we have an anxious time ahead of us.

APPOINTMENT OF DEPUTIES AS SUPERINTENDENTS

A striking feature of this year has been the unusual number of changes of medical superintendents. We are losing some old friends. I cannot name them all, but to take only two or three men, so different in their various ways as Dr. Menzies of Cheddleton, Dr. Good of Oxford, and Dr. Eager of Exminster, they will not be easily replaced. Incidentally, some recent appointments prompt me to say something about the practice of promoting deputies. It is a practice which seems to me of doubtful wisdom. I can perfectly understand the desire, a very natural desire, on the part of visiting committees to reward good and faithful service. To appoint a strange man is always a bit of a gamble; to promote the man you know has a reassuring appearance of safety. But the top post is vitally important. The efficiency of the hospital depends on the superintendent more than on any one else. For these important posts you want the best available man. Men who have been deputies for years rarely make the best superintendents, and a deputy who has not been good enough to get a top post somewhere else ought not to be good enough for his own hospital. This "inbreeding," if I may use the phrase, means too often that the new superintendent has no new ideas to contribute. It should be possible to reward the deserving deputy for faithful service by a personal increase of salary, and he ought not to be promoted unless it is quite clear that he is the best candidate in the field.

THE TRAINING AND EXAMINATION OF NURSES

Now I turn to another problem of personnel which is still, I regret to say, unsolved. The Royal Medico-Psychological Association and the General Nursing Council seem, unhappily, to be no nearer agreement. Is there really no escape from the absurdity of two bodies continuing to conduct different examinations and to issue different certificates on the basis of an identical syllabus? I had hoped that a solution might be found in an arrangement under which the Royal Medico-Psychological Association would conduct examinations as agents of the General Nursing Council and under their supervision. Perhaps the time has come when this Association, as an impartial body, might once more take soundings to see whether any settlement is possible. I am not sanguine of success, for I see little desire on either side for settlement. But the matter is of real importance, because I am convinced that mental nursing will never take its proper place in the eyes of the nursing profession so long as there is any suggestion that mental nurses are choosing a soft option, and will not face the same tests as other branches of the nursing profession.

VOLUNTARY PATIENTS

I am very glad to be able to tell you that good progress continues to be made in the administration of the Mental Treatment Act. Last year there was

a steady increase in the number of voluntary patients, and there was an improvement, in some areas a marked improvement, in the number of temporary patients. Temporary patients will never be a large class, not only because of the complications of Section 5, but also because a non-volitional condition implies a physical and mental state which is relatively uncommon. Our estimate that temporary patients are not likely to amount to more than 15 per cent. of total admissions is probably sound. In the one or two cases where this figure has been exceeded the section has been misinterpreted. Voluntary patients, judging by the experience of registered hospitals and licensed houses and of those public mental hospitals in areas where the Act has been vigorously applied, should ultimately exceed 50 per cent. of all admissions. This means that we may look for a time when only one-third of all admissions will be under certificate. These are not fancy figures. They can be reached, and, indeed, they have been reached already in some areas. If in some, why not in all? You can imagine what the psychological effect will be, and how great the change will be in the public attitude to mental hospitals, when more than half the patients come in voluntarily and two-thirds come in without certificate or the intervention of any judicial authority.

GENERAL PROGRESS

The progress which has been made in the five years since the Mental Treatment Act came into operation is most reassuring. But further progress depends on educating public opinion and on educating medical opinion. For that process of education we must rely mainly on bodies such as the Mental Hospitals Association. The extent to which any central department can, or ought to attempt to, educate public opinion is narrowly limited. We must rely on your efforts. You know what can be done; you know what ought to be done. It will be done, if only you want it badly enough.

MEDICINE AND THE LAW

Standards of Sanity in Suicide

THE traditional indignities which befell the body of a suicide in past ages still incline a coroner's jury to the verdict of "suicide while of unsound mind." In a civil action of some importance (Beresford *v.* Royal Insurance Co.) a special jury has had no hesitation in declaring that a suicide was sane. Major Rowlandson, insured for a gross sum of £50,000 and unable to meet his creditors or to renew his premiums, shot himself in a taxicab in Albemarle-street just before 3 P.M. on August 3rd, 1934. He was covered by insurance up to 3 o'clock; letters which he left behind showed that his action was deliberate. "I believe," he wrote, "I am technically defrauding the insurance company, which is unpleasant to contemplate." Mrs. Beresford, his niece and administratrix, claimed the money from the insurance company. The company relied upon the verdict of the coroner's jury that the deceased died by his own felonious act; it contended that the policy was void. Just as a shopkeeper could not set fire to his premises and successfully claim on his fire insurance policy, so a man could not destroy his life and benefit his estate by so doing. Mrs. Beresford rejoined that the deceased was insane and not responsible for his actions. The first fight took place, before Mr. Justice Swift and a special jury, on this issue of insanity. Medical experts gave their opinions as to Major Rowlandson's state of mind. The judge asked the jury, in the formula appropriate to criminal trials, whether the deceased had laboured under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know it, that what he was doing was wrong. The jury answered "No." The judge asked them also to apply a less rigorous test—was Major Rowlandson, when he shot himself, possessed of that degree of physical, intellectual, and moral control over his actions which a normal man would possess? The jury, clinching the matter, answered "Yes." Then followed legal argument. A perfectly sane man, insured for £50,000, had committed suicide for some reason of his own: why should not the insurance company pay? Because, answered the company, it would be contrary to public policy to require the fruits of his crime to be paid into his estate. But Major Rowlandson had been insured since 1925 under a policy which contained a condition that, if he committed suicide within the first 12 months, the policy should be void. He had gone on paying his premiums for another nine years before killing himself. The company could have protected itself by stipulating that it would not be liable in the event of felonious or insane suicide whenever committed; it did not do so. Mr. Justice Swift decided that the insurance company must pay. He awarded the agreed sum to Mrs. Beresford with interest at 4 per cent. and with the general costs of the action, the insurance company being given, however, the costs on the issue of insanity on which it had succeeded. A stay of execution was granted and this most interesting case will be reviewed by a higher court.

The Punishment of "Professional Abortionists"

At the Old Bailey lately Lord Hewart passed a sentence of three years' penal servitude on a woman doctor for criminal abortion; she was evidently, he said, a professional abortionist. At Winchester assizes last week Mr. Justice MacKinnon used the same description of a woman who was found guilty not only of using an instrument to procure abortion but also of manslaughter. He passed a sentence of 15 months in the second division. Although a recent decision of the Privy Council has established the public right to comment on the relative severity or leniency of sentences for similar offences, it would be futile to expect standardisation of punishment. In the case before Lord Hewart the accused was found guilty of offences in respect of five different patients; there was evidence of systematised practice and substantial fees. In the case before Mr. Justice MacKinnon we must assume that there was some occasion for mitigation.

At the trial at Winchester assizes counsel for the defence drew the jury's attention to the ordeal which his client had undergone at the coroner's court previously. She had been present for several days at the inquest, he said, and was then invited to make a statement. He pictured her as "bludgeoned" in the witness-box before the coroner; the police had made no move to arrest her till she had been "tried" in the coroner's court. The advocate must not neglect any means of gaining sympathy for his client, but it is fair to the police to remember that they cannot arrest without evidence and cannot ignore the evidence obtained during an inquest. There are two opinions about the coroner's court as an instrument for promoting the administration of justice and the punishment of crime. The report of Lord Wright's Committee on Coroners has suggested that the police do not value the inquest as an aid to collecting evidence. The case at Winchester points the other way.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

CHANGES IN EDINBURGH

THE uncertainty which has prevailed regarding the future of the chairs of medicine in Edinburgh has been partially dispelled. The University Court has decided that from Oct. 1st, 1936, Prof. David Murray Lyon, who has held the Christison chair of therapeutics since 1924, will be translated to the Moncrieff Arnot chair of clinical medicine in succession to Prof. Edwin Matthew who is due to retire. Prof. Matthew was appointed to hold this chair when Prof. Edwin Bramwell resigned 18 months ago. Dr. Derrick Melville Dunlop has been appointed to the chair of therapeutics vacated by Prof. Murray Lyon. It is generally believed that the University intend to transfer activities of the holder of the chair of clinical medicine from the Royal Infirmary to the municipal hospitals. This will be a step in the endeavour being made by the University, in cöoperation with the municipal authorities, to make first-class hospitals of some of the municipal institutions, both for the treatment of patients and for the teaching of students. A particularly valuable part of this scheme is the building of residential accommodation in the municipal hospitals where students will be obliged to reside for a period of study. The main difficulty has been with regard to staffing the new hospitals. Junior physicians and surgeons have been appointed on a more or less honorary basis, and must therefore do private practice in addition. A considerable increase in the number of practising physicians, surgeons, and specialists in Edinburgh will therefore result, and, as there are already too many of these, the prospect is not welcomed. It is to be hoped that more satisfactory staffing arrangements will be made, and particularly that the recommendations of the Committee on Scottish Health Services will be carried out—namely, that (1) "regional hospital service committees, representing voluntary and statutory hospitals, should be set up by statute for each of the five regions of Scotland," and (2) that "for coöperation between statutory and voluntary hospitals it is necessary to place both groups of hospital on an equal footing."

PARIS

(FROM OUR OWN CORRESPONDENT)

AN APOCRYPHAL EPIDEMIC OF INFLUENZA

IN the winter of 1934–1935 we all thought we suffered in Paris from an alarming epidemic of influenza, if not in our own flesh, at any rate in that of our neighbours. Now Dr. E. Joltrain, *médecin inspecteur des epidémies*, has almost rudely disillusioned us on this score, and has assured that not only the public, but also we medical practitioners are much too fond of labelling as influenza every acute infection of the respiratory tract. This error is, in his opinion, most monstrous when we talk of one and the same patient as having suffered from several attacks of influenza in the same season. Influenza being a disease which confers immunity to a second attack for a considerable time, the patient who indulges in it more than once a year is labouring under a nomenclative delusion. Although influenza belongs to that group of infectious diseases whose notification is facultative, the number of conscientious notifiers is more or less constant from year to year, and it is, therefore, possible, by comparing the annual returns, to form some sort of estimate of the incidence of the disease. In the winter of 1934–1935, from the beginning of September to the end of April, only 371 cases of influenza were notified in Paris and the Department of the Seine. The corresponding figure for the succeeding winter, when no one talked of any serious epidemic of influenza, was 295. It might be argued that the alleged epidemic of influenza in the winter of 1934–1935 left its mark on the incidence of pneumonia and bronchopneumonia, the notifications of which numbered 3520. But in the following winter, the number of such notifications was a little higher, being 3728. All of which goes to show that the man in the street, and even the superman in the employ of the daily press, are not always reliable informants in times of epidemics, real or imaginary.

THE PIRQUET TESTING OF CHILDREN

From the beginning of January, 1921, to the end of 1935, Prof. Nobécourt and Dr. S. B. Briskas have examined 1989 children between the ages of 6 and 10 years with von Pirquet's cutaneous tuberculin test which they have checked, when they have thought it necessary, with the Mantoux intracutaneous test. They have recently published a summary (*Presse Médicale*, June 6th, 1936, p. 913) of their findings which shows that 53 per cent. of all the children gave a negative Pirquet reaction and showed no sign of tuberculosis. The remainder were positive reactors or tuberculous patients giving a negative reaction to tuberculin. It was somewhat curious that the percentage of infected children was considerably higher among the girls than among the boys, the figures being 49 and 43 per cent. respectively. As was to be expected, the incidence of positive reactions rose with the children's age.

TREATMENT OF CHOREA WITH MALARIA

On June 9th, a report by Prof. V. Gillot and Dr. R. Dendale, both of Algiers, was presented to the French Academy of Medicine on the treatment of Sydenham's chorea with benign tertian malaria. Whether the chorea was of recent date or of long-standing, whether it was recurrent, generalised, or localised, they have found this treatment beneficial. They have, as a rule, infected their patients with *Plasmodium vivax* and have invariably observed the same response to the onset of fever; the choreic movements increased while the temperature rose during the first stage of the fever, and then diminished rapidly between the bouts, to disappear completely and for good at the end of one of them. It was never necessary to allow the number of bouts of fever to exceed eight to ten before giving intramuscular injections of quinine to arrest the malaria. The five first cases thus treated were described in detail, and it was stated that during the period of more than one year in which chorea has thus been treated, success has invariably been achieved.

TUBERCULOSIS WORK AMONG STUDENTS

At its last meeting, the Comité National de Défense contre la Tuberculose voted more than a million francs towards the tuberculosis campaign in connexion with the health of various categories of students. The sum of 124,000 francs was earmarked for the provision of tuberculosis research scholarships, as well as travelling scholarships to enable the holders thereof to study tuberculosis at home or

abroad. A Fondation Albert-Calmette has been established for a research scholarship at the tuberculosis laboratory of the Pasteur Institute, the sum of 12,000 francs being set aside for this purpose. In memory of Prof. Léon Bernard, a scholarship is to be attached to the Laennec Hospital, and 6000 francs have been voted for this object. The Comité National has also voted 71,200 francs for the provision of diagnosis stations in connexion with various French universities. The sum of 250,000 francs has been allocated to the equipment of the student's sanatorium. A fund for the aid of needy students requiring institutional treatment has been allotted 5000 francs, and 26,000 francs have been voted for the provision of radiological apparatus for the Cité Universitaire on the outskirts of Paris.

PANEL AND CONTRACT PRACTICE

London

THE insured population of London at March 31st, 1936, was 1,900,486, the highest figure since September, 1933. Medical cards issued or returned to insured persons numbered 138,271. Although the number of persons removing out of the county was 22,433 as compared with 13,930 moving inwards, acceptances by practitioners rose to 81,339, an increase of 16,031 or about 25 per cent. over the corresponding quarter of 1935. At the date mentioned there were 1,793,020 persons included in practitioners' lists, and 992 own arrangers. Medical records recovered from practitioners other than those in respect of transferred practices were 59,682. Local transfers show a slight tendency to increase, for 7225 persons applied, of whom 5463 actually transferred, as compared with 7013 and 5061 respectively a year ago. But the proportion of persons on doctors' lists who so transferred is still only 0·3 per cent., which suggests that few insured persons are dissatisfied. The percentage for the twelve months ended March 31st was 1·01. There are in London 2058 insurance practitioners in general practice and 101 in institutions, the average number of patients per doctor being 837. Drugs and appliances are supplied by 1031 chemists and 11 contractors from 1657 shops, and during the quarter 2,632,637 prescriptions, costing £86,441 11*s.* 4*d.*, were dispensed. The average cost per prescription was 7·88 pence, and as the average number per person was 1·48 the average cost per person was 11·69 pence. Compared with the first quarter of 1935 the number of prescriptions increased by 244,131, only about 26,500 of which were accounted for by the incidence of leap year. March, 1936, shows the highest monthly number (0·51) of prescriptions per insured person on practitioners' lists since January, 1933, when an epidemic raised the figure to 0·68.

Testing Drugs and Appliances

Each insurance committee is required to carry out yearly a certain number of tests of drugs and appliances supplied to insured persons, the number being determined by the Minister of Health. A proposal is now made for revision and reallocation of these tests, subject to consultation with the insurance and pharmaceutical committees, on the basis of one test for each four insurance chemists' shops within a committee's area and one for each ten on the list but outside the area, in the case of drugs, and one-fourth of that number for appliances. This allocation does not allow for so frequent testing in relation to the number of chemists' shops as did the present allocation at the time of its inception; the number of shops has increased and it appeared to the Minister unnecessary to adhere to a basis which would result in most areas in a heavy increase in the number of tests, so long as the number is sufficient to achieve the purpose of a testing scheme.

In January, 1935, the London committee asked the Minister to increase the number of test prescriptions to be taken annually in London. At that time it was suggested in the lay press that over a million prescriptions a year were wrongly dispensed, a figure arrived at by applying to the eight million prescriptions dispensed annually in the county the fact that about 14 per cent. of the tests had had to be investigated by the pharmaceutical service subcommittee. The number of tests hitherto has been 363 of drugs and 86 of appliances whilst the proposed revised figures are respectively 360 and 90, a net increase of one. The medical benefit subcommittee pointed out that on the basis of an examination made some years ago the proportion of prescriptions for medicines is 93 per cent., and while they were disposed to recommend the acceptance of 450 as the total number of tests to be made annually, they preferred the number of drug tests to be 425 and of appliances 25. The insurance committee referred back the report with an instruction that the Minister should be approached with a view to securing authority for making an increased number of tests.

Chemists' Hours

The same insurance committee proposes, subject to the concurrence of the pharmaceutical committee and the consent of the Minister, to amend their scheme for securing a proper pharmaceutical service so as to provide that an insurance prescription must be dispensed if presented at any time when a chemist's shop is open for other business. This is the outcome of a case where a prescription was presented at an establishment of a firm of chemists at a time when the shop was open and advertised to be open for business, but outside the hours registered by them with the committee for the dispensing of insurance prescriptions. The chemists dispensed the medicine as a private transaction, charging the applicant, and the question arose whether they were bound forthwith to dispense the medicament ordered. As they had submitted the prescription to the committee for payment they had to refund the amount charged.

Exceptional Prescriptions

Among the prescriptions issued by insurance practitioners in London during the first quarter of 1936 are (*a*) twelve, to one patient, for a preparation of the suprarenal cortex, cost £34 1*s.* 6*d.*; (*b*) one for twelve ampoules of an ovarian hormone preparation, cost £5 12*s.* 4*d.*; (*c*) one for snake venom serum, cost £3 6*s.* 5*d.*; (*d*) one for antipneumococcal serum, cost £10 5*s.* 5*d.*

Additions to the Drug List

On July 1st an addition was made to the list of drugs which an insurance practitioner may prescribe (or, if he wishes, supply) to his patients. The list now includes desiccated stomach, extracts of stomach, and the active principles of stomach supplied for the treatment of pernicious anæmia. After the words "liver extract" have been added "and the active principles of liver."

GRAINS AND SCRUPLES

Under this heading will appear week by week during the summer the unfettered thoughts of doctors in various occupations. Each contributor will be responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A WEST-COUNTRY PRACTITIONER

HERE in the West Country old remedies die hard. Within the year I have been handed a large and evil-smelling paper parcel full of badger-fat which, I was assured, is a specific for all forms of rheumatism. I tried a little on some of my more primitive and gullible patients, but failed to produce any benefit whatsoever. The bulk of it I had to throw away as my surgery became almost uninhabitable and my dispenser demanded a box-respirator. With another old remedy, however, a more striking result was obtained. I had a patient with anasarca due to progressive myocardial failure and treated him in the best modern manner with salyrgan and ammonium chloride. Despite frequent and heroic dosage, I was unable to produce more than a moderate diuresis and very little reduction of the œdema, whereupon his wife suggested that he might try dandelion tea—an insipid infusion made from the roots of dandelions. Not without a certain hauteur I consented but, to my disgust, it worked at least twice as well as salyrgan. Succus taraxaci is, of course, in the British Pharmacopœia, but it is an old remedy and had no right to succeed like that where its betters had failed. Other diuretic drinks which survive as household remedies are infusions of broom tops and pellitory of the wall; and sweet spirit of nitre has always been tried for lumbar backache (which, as everyone knows, is "caused by the kidneys") long before the doctor is called in.

* * *

I think I am right in saying that the term "doctor" is restricted by law to members of our profession and to those holding a doctor's degree from a university in some subject other than medicine. Unfortunately the terms "professor" and "specialist" are not similarly protected. Any purveyor of hair-oil may call himself a professor of trichology, and any manufacturer of foot-gear, a foot specialist. The effrontery of such persons is only equalled by the gullibility of the public. A young woman on my panel came into my surgery one day to ask me for a certificate to give to her society recommending her for a pair of arch-supports. The supports she wanted were a proprietary article and a bad one at that. She informed me that I need waste no time examining her feet as she had already seen a "foot specialist" who had assured her that the supports were necessary and, on further inquiry, I found that the foot specialist was a young woman who charged five shillings for a consultation. I wondered airily whether she had any pecuniary interest in the sale of these supports. My patient did not know, but admitted that there were several pairs of them exhibited in the window of her consulting-room. On examination, I found the girl suffering from a mild degree of flat-foot easily remediable by exercises. I told her what to do and she departed feeling, I suspect, that I had refused to sanction the supports from motives of professional jealousy.

* * *

Heavens defend me from drug addicts. A qualified veterinary surgeon who had acquired the habit once came under my care. His profession had enabled him, as long as his credit lasted, to procure immense quantities of dangerous drugs from wholesale manufacturers, on the plea that they were required for killing horses. When I had the misfortune to come across him he was already taking vast quantities of morphia—he told me as much as grs. 25–30 by mouth in 24 hours—to say nothing of sundry nips at the chloral or tr. opii bottle. I was unable to check the truth of this confession (or boast), but see no reason to doubt it, for he had dangerous drugs hidden all over his house and dispensary. Throughout the four months I attended him I gave him nothing stronger than medinal or bromide, but I did not cure him. Neither, in point of fact, did I kill him. Having worked on him for three weeks I persuaded him, with the aid of a psychiatrist, to enter a mental hospital as a voluntary patient. Five days later he discharged himself and returned to me. Before I saw him he had treated himself for diarrhœa with a bumper containing 4 ounces, not drachms, of laudanum, which gave him temporary relief. He subsequently developed violent pains in his legs for which he took ℥ij of chloral. When seen soon afterwards he was drowsy, fuddled, and sentimental, feebly brandishing a revolver with which he threatened to shoot himself. I took this from him, also a parcel containing morphia which had just arrived by post, and warned the local chemists and the inspector of dangerous drugs. Between bouts he would improve remarkably, becoming boastfully and mendaciously reminiscent. He told me, for example, how he had castrated and killed a man in Canada for attempted rape and burglary, and of (imaginary) war exploits with the Fort Garry Horse—he was really in the R.A.V.C.—which had earned him numerous decorations. I have a 14-page letter of his beside me written in a shaky but legible hand to a lady who was supposed to be his niece and a trained nurse (but who, in fact, was neither). In it I am described as "a real man of firm determination" who decided that if the patient was left to his own resources "he would not survive another night." [In passing, it might be urged that, before believing the imbecile observations attributed by a patient to another doctor, we should make due allowance for the patient's powers of invention.] The letter goes on to say that I had ordered "a *brave* nurse for night duty" and "on no account to send a male orderly because the patient might kill him at the first opposition, whereas any nurse could lead him on a thread of cotton, however mad he was with pain." The patient then plunges into a description of his service with the Fort Garry Horse "who were the wildest cavalry in the world in warfare, and in peace-time were quartered in the desert or prairie, never allowed within a hundred miles of a town." Still they had a strict code of honour amongst themselves. The first thing every one of these men was taught was to revere a nursing sister until eventually every man would look upon her as a perfect Madonna. To fortify the illusion, "the nurses were told of the nature of these wild men and instructed never to look at or smile at one." It is a good letter.

Incidentally my patient was bankrupt, not only morally but also financially. He was living on small and unreliable remittances from his family who avoided him as the plague. One day he relapsed badly. During an attack of what he called his "old adhesion pain," said quite untruthfully to be the result of a

bayonet wound in the abdomen, he begged me for morphia which I refused. He loaded me with reproaches and rang up the same night to say that he had another revolver and was going to blow out his brains. I advised him to get on with it but, instead, he took some medinal and inhaled himself to sleep with chloroform. The next day I confiscated the second revolver, the chloroform, and a fresh parcel of morphia. He kissed my hand in a maudlin manner but rang up four times during the night and came to my surgery in the morning truculently demanding the return of his possessions. Having by this time had a bellyful, I returned the morphia and the second revolver, but withheld the ammunition. I saw him that afternoon. He was comatose, cyanosed, and stertorous. His respiration-rate was 4 to the minute. His pupils were pin-point; his pulse very slow and full. He recovered completely and two nights later made his housekeeper ring me up in the small hours to tell me that he was dying and what did I propose to do about it. Ten days later, while again comatose, he was moved into a poor-law institution, but discharged himself on regaining consciousness. The bailiffs who took possession of his house were threatened with the (empty) revolver, which was then confiscated by the police. Shortly after he collapsed in the High-street of a neighbouring town and was admitted to hospital under the care of a physician whom I knew. The patient denied that he had ever seen a doctor whilst living hereabouts. At long last, in response to numerous petitions, his relations came and took him away. I never heard what became of him. Nor, indeed, do I care.

* * *

Having had occasion to visit the assizes—in the capacity, I hasten to add, of medical witness—I contrasted in my mind the pomp and ceremony of the law with the simplicity of dress and demeanour of our own profession. Here came the judges, bewigged and clad in coloured robes, driving from their lodgings to the courts in a magnificent car. As they stepped out, preceded by their chaplain and followed by various elegant satellites, the policemen sprang to attention, we doffed our hats, the trumpeters blew a fanfare and so these two kindly looking old gentlemen disappeared inside to begin their day's work. It may not be the clothes that make the man, but few could fail to be to some extent impressed by this pageantry. The awe-inspiring effect of clothes is well recognised by lawyers just as their sex-appeal value is appreciated by the fighting services. We are apt to congratulate ourselves that the old magic, mystery, and pomposity no longer have a place in medicine, but I sometimes wonder whether we might not achieve some striking psychotherapeutic successes if we did our work in academic dress, although it would be infernally cumbersome to work in. And now from Germany, the land of uniforms and uniformity, comes the news that henceforth doctors are to be dressed alike in "peg-top" trousers, double-breasted black jackets with large white buttons, white sports shirts open at the neck, and black berets. The effect should be gay and Apache-like but I doubt if it will really suit all types and figures. A portly doctor thus clad and carrying an open umbrella and a black bag would not gain dignity by the change.

* * *

"Oh Doctor please to come at once
The baby's going to choke . . ."
"Father will shortly bleed to death . . ."
Or "Mum can hardly catch her breath,
We think she's had a stroke . . ."
"Uncle complains of awful pains . . ."
"Young Albert's neck is broke."

I dash around from place to place
I answer every call:
I find the baby fighting fit,
True, Father's nose did bleed a bit
From a quite trifling fall,
But otherwise I realise
There's nothing wrong at all.

Yet when I *fail* to go at once
As one day I may fail—
'Twill be that day the Fates decide
That Mum *does* cross the Great Divide,
That Father hits the trail,
That Baby chokes, that Uncle croaks,
And Albert kicks the pail.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. J. C. Sinclair to *Drake*, for R.N.B.; H. E. Hall to *Victory*, for R.N. Hosp., Haslar; R. W. Nesbitt to *Pembroke*, for R.N. Hosp., Chatham; and O. D. Brownfield to *Britannia*.

Surg. Comdr. E. B. Kelley is placed on retd. list.

Surg. Comdrs. (D) T. E. Breveter to *St. Angelo*; S. E. Brown to *Pembroke*, for R.N.B.; and L. B. Osborne to *St. Vincent*.

Surg. Lt.-Comdrs. J. Johnston to *President*, for course; and D. C. Wilson to *Drake*, for R.M. Infirmary, Plymouth.

Surg. Lt. V. J. Fielding to be Surg. Lt.-Comdr.

Surg. Lts. G. H. G. S. Sander to *Victory*, for R.N.B., and to *Curacoa*; D. M. Dean to *Victory*, for R.M. Infirmary, Eastney; F. T. Land to *Pembroke*, for R.M. Infirmary, Chatham; T. J. Harkin to *Emerald*; L. Merrill to *Mantis*; E. H. Murchison to *Cyclops*; and G. A. M. Smith to *Cockchafer*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs. A. L. Gunn to *Curacoa*, and T. C. Stevenson to *Victory*, for R.N. Hosp. for training.

Surg. Lt. A. Elliott promoted to Surg. Lt.-Comdr.

Surg. Sub-Lt. J. Scott to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. Hendry, having attained the age for retirement, is placed on ret. pay.

Maj. R. A. Hepple, M.C., to be Lt.-Col.

Capt. A. F. Kennedy retires, receiving a gratuity.

Capt. P. R. Wheatley resigns his commn.

Lt. (on prob.) D. Wright is secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931. (Substituted for notification in the *Gazette* of May 21st, 1935.)

Lt. (on prob.) R. A. Toledo resigns his commn.

TERRITORIAL ARMY

Maj. W. Walker, M.C., Res. of Off., to be Maj.

Capts. G. Tudhope and E. G. R. Grant to be Majs.

Capt. S. P. Wilson, Res. of Off., to be Capt.

Capt. A. P. Trimble to be Divl. Adjt., 48th (S. Midland) Div., and vice Capt. J. C. Gilroy secd. under Colonial Office.

Lts. C. E. Moorhead and I. R. Jones to be Capts.

ROYAL AIR FORCE

Squadron Leader T. J. X. Canton, to Headquarters, Training Command, Stanmore, for duty as Deputy Principal Medical Officer.

Dental Branch.—Flight Lt. P. N. Margand to R.A.F. Station, Aldergrove; Flying Officer O. F. Brown to R.A.F. Station, Andover.

Flying Officer H. M. G. Williams is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Maj. L. Blake, M.C., to be Lt.-Col.

PARLIAMENTARY INTELLIGENCE

THE MIDWIVES BILL READ A THIRD TIME

PERIOD OF ATTENDANCE AFTER CONFINEMENT

On July 7th the Midwives Bill was recommitted in respect of Clause 1 (Provision of Domiciliary Service of Midwives), when Sir KINGSLEY WOOD moved a series of amendments to ensure that the period of attendance of a woman as a maternity nurse should correspond to the period which from time to time might be laid down by the Central Midwives Board for the attendance of midwives. He said that the new rules of the Central Midwives Board would be passed and would become operative in time for the implementing of the provisions of the Bill.—Mr. SHAKESPEARE, replying to questions by Mr. BATEY, said that in the unlikely event of a local authority failing to provide a sufficient number of midwives, the Minister of Health would have power to withhold part of the block grant under the Local Government Act, 1929. If a nursing association had not carried out their duty, it would be the duty of the supervising authority to see that the whole area was covered by a scheme.

COMPENSATION

On Clause 5 (Compensation to Midwives Ceasing or required to Cease Practice) Mr. M. BEAUMONT moved an amendment providing that any midwife aggrieved by the decision of a local authority to pay an annuity as compensation rather than a lump sum might appeal to the Minister.—The amendment was agreed to, as was a further one moved on behalf of the Government enabling a local authority, if it so desired, instead of paying out the compensation in the form of an annuity to pay it partly in a lump sum and partly by way of annuity.—Another amendment moved by Mr. SHAKESPEARE, to carry out an undertaking to make it clear that the local authority's decision as to the manner in which the compensation should be dealt with should be taken by reference to the interest of the midwife, was agreed to.

Replying to Mr. VIANT, Mr. SHAKESPEARE said that no fee would be charged for a refresher course, as those courses were only in respect of women who were already midwives. The fee was authorised to be charged in respect of women studying for midwifery and undergoing examination by the Central Midwives Board. If a woman took a number of examinations she would pay a small fee for each examination. The Minister had the final word, because the scale of fees for these examinations had to be submitted to him, and came under his jurisdiction.

PARLIAMENTARY SECRETARY'S SUMMING UP

Mr. SHAKESPEARE, in moving that the Bill be read the third time, said it was a useful and important measure, and added another storey to the edifice which they were seeking to build in order to secure safer motherhood. The Bill substantially followed the line of attack recommended by the Joint Council of Midwifery, on which there were representatives of nearly every body directly or indirectly interested in midwifery, whether medical practitioners, nurses, midwives, obstetricians, or voluntary bodies. Under the Bill, when the schemes were in operation, every expectant mother, whatever her circumstances, would know that she could call on the services of a well-trained midwife, either to act as a midwife in the absence of the doctor, or if a doctor was in attendance, to act as maternity nurse during the lying-in period, which would be a period corresponding with the period laid down by the Central Midwives Board as the proper period for a midwife to be in attendance on a woman in childbirth. Those who knew anything about the subject would rejoice that during the passage of the Bill they had taken an important step to increase that period of attendance. The rules of the Central Midwives Board referred only to a midwife acting as a midwife, and steps were being taken to secure, through the service which was being organised, that there should be sufficient midwives available to act in the capacity of maternity nurses for women after childbirth for the same period of 14 days which, he understood, would be the period chosen. Therefore, a considerable advance, which had long been asked for by people associated with maternity work, had been achieved.

The expectant mother, Mr. Shakespeare went on, need no longer rely for maternity nursing on the services of an unqualified nurse. When the Minister of Health had made an order in respect of an area that a midwifery service was in being, it would be illegal for any woman who was not a qualified midwife, or whose name did not appear on the general register as a State nurse, or who did not possess an obstetric certificate gained from an approved hospital, to attend on a woman as a maternity nurse for gain. The position of the home help, who did the housework and looked after the children, would, of course, continue as heretofore. Under the Bill every mother, whatever her circumstances, would know she had a claim on this highly organised and skilful service. If she could not afford the fees laid down by the local authority or the voluntary society, the fees could, under the provisions of the Bill, be remitted. Instead of belonging to an underpaid and overcrowded profession, as the midwife did at present, she would have a chance of securing a post in a properly organised service, that was, with adequate remuneration, with provision for relief in case of sickness and for holidays, and the duty was imposed on the local authority of providing the practising midwife with an opportunity to refresh her knowledge from time to time by special courses. They could not lay down the scale of remuneration in the Bill, but if in the general administration by local authorities, which surely could be trusted, the Ministry found that for some reason or other midwives were getting inadequate remuneration they would take the matter up, because clearly an efficient service would otherwise not be forthcoming. In the circular which the Ministry would send to local authorities they would point out that one of the objects of the Bill was to secure a properly remunerated service, and that in considering the salaries to be paid, the work of the midwife should be regarded as comparable with that of the health visitor.

The midwife, at present struggling in a rather precarious position, would, if she secured one of the posts to be created under the Bill, get a large measure of security. The Ministry hoped that a service with a proper remuneration and an increased standard of efficiency and training would attract to it women of high qualifications, and that in a few years they would be able to say that they had gone a long way towards securing an efficient midwifery service. If existing midwives did not come into the scheme there was provision under the Bill for them to receive reasonable compensation, graded according to whether they retired voluntarily or compulsorily. The nation would surely gain from the strengthening of this vital public health service. They did not want to frighten mothers into thinking that the risks of motherhood were greater than they really were. By turning figures of maternal mortality into per centages, it would be seen that out of every 100 mothers who gave birth to children only 0·4 died. That percentage was the lowest in any country in which figures were kept, with the possible exception of Holland. But while the death of 2400 mothers a year out of a total of nearly 600,000 who gave birth to children was not a percentage that need cause alarm to the new mother, it was the peculiar poignancy and tragedy of death in childbirth which made the Government and everybody else want to take

whatever steps were possible to reduce the figures. The Bill would help to reduce the figures of maternal mortality, but it would be foolish to claim that merely by the provisions of an adequate midwifery service there would immediately be a fall in the maternal mortality statistics. The subject was so complex and consisted of so many factors that, in the view of those who had studied it, it would yield only to an all-round tightening of each link in the chain of obstetrics and supervision. There must be unremitting watchfulness at every stage.

THE MINISTER'S LAST WORDS

After further debate, Sir KINGSLEY WOOD said that the midwife in future would be a member of an organised service. She would be an integral part of the public health service, and no longer a somewhat lone figure in the campaign against maternal mortality. There had been a difficulty, inasmuch as certain local authorities had adopted rules which required their female officers to retire on marriage. After consulting the associations of local authorities and the London County Council, he intended to point out to local authorities that there was nothing in the Bill to prevent the employment of married midwives, and to recommend any authorities whose rules would prevent their employment to revise the rules so as to enable the authorities, in selecting the midwives first appointed to the new service, to have regard only to their efficiency as midwives. He was glad to say that he had the assent of the associations and of the London County Council, who assured him that they shared his views entirely on this matter.

A DEBATE ON MALNUTRITION

In the House of Commons on July 8th Mr. T. JOHNSTON moved:

That this House has noted with concern the convincing evidence of widespread malnutrition, is of opinion that the destruction of essential foodstuffs is a crime against society, and regrets the continued failure of His Majesty's Government to take effective steps to deal with this grave and urgent problem of hunger and want in the midst of plenty.

The Labour Party's Case

He did not propose, Mr. Johnston said, to go into the question of dietetics. Doubtless they all ate things at the wrong time and drank the wrong kind of liquid at the wrong time and in wrong quantities. He was well aware that dietetics were now being considered more and more by the medical profession. There was a tendency all through the world, from Russia to the United States, towards the disappearance of tuberculosis in every class and every age with one unfortunate exception. Unfortunately tuberculosis was increasing in every country among young women, and it was believed by those best qualified to speak on the subject that that increase was due to the modern practice of what was known as slimming. But his purpose that day was to present the case of malnutrition arising from underfeeding, poverty, and insufficiency. He believed that apart from the question of peace and war there was no graver or more momentous issue. Sir F. Fremantle had committed himself to the statement that ill-health cost the nation in cold cash every year no less than £300,000,000. Sir John Bray, president of the Institute of Municipal Treasurers and Accountants, in his presidential address in 1931 said that the proper figure was £200,000,000. He could personally trace in the national and local accounts something like £113,000,000 per annum spent directly in cold cash on ambulance work arising from disease. Evidences of malnutrition and under nutrition in this country were legion.

A RECITAL OF AUTHORITIES

They would doubtless be told that day that things were getting better—that the infant mortality-rate had fallen from 150 to 80 in 20 years, that the expectation of life of the average citizen in this country had increased in 50 years by 15 years per life, that typhoid, typhus, infantile diarrhœa, leprosy, and small-pox had been killed by the splendid efforts that this country had made in public sanitation. This might be true; it might be true that our death-rate was largely decreasing, but all that was largely irrelevant to the discussion. Sir Robert McCarrison in his Cantor lecture to the Royal Society of Arts this year said:

To save a man's life by surgery does not necessarily make a healthy man of him. What we should like to know is the number of semi-invalids carried by the nation, why all hospitals and nursing-homes are full, why under National Health Insurance the increase between 1920 and 1930 of short-term sickness (that is sickness not exceeding six months in duration) is 109 per cent., and of long-term sickness 230 per cent.; why the enormous decline in quality of eyes and teeth.

The Adjutant-General in his report for 1934 pointed out:

What is disconcerting to any citizen with a care for the good of his country is that over 52 per cent. of the men who went to the recruiting office did not come up to the physical standard laid down and in the big industrial areas of the North the percentage of rejections rose to 68.

The chief medical officer to the Board of Education in his report for 1934 dealing only with the routine medical examinations of schools, said that 12 per 1000 of the children examined were malnourished and 14 per cent. were undernourished. Sir Robert McCarrison in the lecture to which he had referred pointed out that school medical officers were only judging by height and weight, and that if they included such symptoms as round shoulders, protruding bellies, easy susceptibility to fatigue, and poor muscular development it was not 12 per 1000 that were shown to be malnourished or undernourished but several times that figure.

The committee of the Save the Children Fund extracted figures from the reports of the various medical officers for the larger cities in the country showing that the children suffering from subnormal nutrition in Leeds were 9·2 per cent., in Merthyr 13 per cent., in Newcastle 17·2 per cent., and in Pontypridd 21 per cent.

Dr. G. C. M'Gonigle had found 83 per cent. of 2676 children examined in Durham county showing definite signs of rickets. Sir George Newman's committee set out to test his figure, and they made a careful examination by X ray and otherwise of 1638 children in London. Although they disagreed with Dr. M'Gonigle's figures, even Sir George Newman's committee found that 87 per cent. of the children examined in London had some abnormality which they said might have been due to rickets.

Dr. G. F. Walker had said that between the Tees and the Tyne there was a substantial and progressive deterioration in public health; secondly, that children and young adults were more prone to infections and catarrhs, and recovered from those much more slowly; thirdly, that anæmia due to malnutrition was rapidly increasing; and, fourthly, that rickets were highly prevalent. The Ministry of Health sent professional experts to the area to examine that statement. They made a special examination of 1300 Sunderland children specially selected from the poor areas, and discovered that 20 per cent. of those children were suffering from subnormality or malnutrition. In Durham county they got nearly similar figures. They found 21·9 per cent. subnormal and 1·3 per cent. were definitely undernourished. Worse than that, the records of the Sunderland municipal hospital showed that of 1400 pregnant women 12 per cent. were suffering from anæmia and 7·5 per cent. from debility.

Recently Sir John Boyd Orr published a book which aroused widespread attention. He showed that 10 per cent., or 4,500,000 people of this country,

were endeavouring to live on a standard which was below the minimum of the British Medical Association. They could only spend 4*s*. per week on food, and he said that their diet was deficient in every constituent. He added that there were 9,000,000 people in this country who could only spend 6*s*. per week on food, and that while their food-supply was adequate in fuel and tissue building constituents it was deficient in protective constituents.

The Women's Labour Party had taken 476 unemployed families and discovered that 41 per cent. could not spend more than a maximum of 3*s*. per week per head on food, and a large number could not spend more than 2*s*. per week. There were 179 of those families, or 37 per cent. of the total, who bought no fresh milk any week in the year. Thirty-two of the families could buy one pint of milk on Sundays as a delicacy, but the rest were in semi-starvation.

According to a remarkable report called the Jones-Cowie report of an investigation in Cardiff in the good working-class houses only 91 per cent. got liquid milk per day, in the new housing areas where more rent had to be paid 85 per cent. only had liquid milk, and in the poor working-class houses 26 per cent. of them never got liquid milk at all.

The Ministry of Health report on "Diets in Poor Law Children's Homes," published in 1932, stated that the weekly minimum cost of food alone purchased wholesale and for 200 children at a time for the diet fixed by their own medical officer came to 4*s*. 6½*d*. per head. On the British Medical Association's diet scale the cost was 5*s*. 10*d*. per individual, and Dr. M'Gonigle now said that, with the increase in prices, that must be 7*s*. But Dr. M'Gonigle in his recent book went further and showed that the death-rate of the 25*s*. to 30*s*. a week family was more than double year after year the death-rate of the 75*s*. a week family.

THE LONG AND THE SHORT OF IT

All this, said Mr. Johnston, in a world where they were busily engaged in destroying food or to a large extent in preparing legislative and administrative restrictions on the production of food. If they could not agree with the pleas made by Prof. Julian Huxley and others for a free milk supply to our school-children, surely as a temporary measure they might take steps to bring the babies and the children up to 5 up to the level of what was offered to the children of school age. He suggested that the Minister of Health should send out to every medical officer of health a circular telling them that next winter they would get whatever supplies of milk they required from the Milk Marketing Board at manufacturing prices. The beginning of the way out of the present mess was to authorise medical officers of health to get milk supplied at 5*d*., which would be within the competence of the local ratepayers, and to see to it that every human being got an adequate supply of this most necessary foodstuff.

The Minister of Health Defends His Policy

Sir KINGSLEY WOOD said that in this matter of nutrition, which was so vital to the good health of the nation, he thought it could fairly be claimed that the initiative had been taken by this country, not only in investigation but by action, and that while, as in other spheres more could and should be done, this country certainly led the way in the services and provisions which it was making for its people. As a result of those efforts there was in this country to-day a rising standard both of health and social conditions. Malnutrition was a word which was used to-day and much abused. Few took care, and many refrained when using it, to explain its true and full meaning and the terms of the motion, with its implication that malnutrition was solely concerned with lack of food was one more example of how a problem largely scientific and economic could be twisted and turned for other purposes. The motion alleged widespread malnutrition—it was not a matter of certain areas, he could understand that—and with its concluding terms linking up malnutrition with allegations of want and hunger it was a general fulmination against the whole condition of the nation.

After quoting Dr. M'Gonigle's definition of malnutrition and Sir John Orr's conclusion that—

> There is need for further investigation and further discussion on the whole question in all its complicated relationships in order that the measures taken to deal with the situation may be based on generally accepted facts and well-informed public opinion—

Sir K. Wood remarked that there was a League of Nation's report on nutrition which reminded them that nutrition was an economic, agricultural, industrial, and commercial problem, and it was therefore not surprising that doctors and scientists, like politicians, disagreed on this subject. Prof. Cathcart had said that malnutrition was due not so much to poverty as to ignorance and other causes of the same kind. Dr. Robert Hutchison had asserted that diseases due to overnutrition were increasing, while those due to undernutrition were decreasing. If it were really true that there was widespread malnutrition everyone would agree that the health of the population would be rapidly declining and national deterioration would be widespread, especially in children and young people. Viewed over any period of time which enabled just comparisons to be made our national health was improving, not merely steadily but remarkably. In the last 20 years they had added some seven years to the expectation of life and reduced the infant mortality-rate from 100 to 57 per 1000 births. Improvements of this magnitude in our vital statistics were not compatible with widespread malnutrition.

DISEASES ASSOCIATED WITH MALNUTRITION

Take the still more direct test, so far as this country was concerned, of those diseases they all knew were specially associated with malnutrition, tuberculosis, and rickets. The authoritative facts were that the death-rate from tuberculosis was less than half of the rate in the first decade of this century and less than a quarter of the rate 50 years ago; and as regarded rickets, which was directly associated with this question, the number of deaths was only half of the number five years ago and there had been a progressive diminution in the number of patients with active disease.

The report which has just been issued by the Committee on the Scottish Health Services said that the decline in rickets, especially in its severer forms, was one of the most striking features of the evidence given before the committee. Another matter which was a very fair test in face of a general indictment of this kind was the condition of the children of the country. He (Sir K. Wood) had the official figures which related to the routine inspections by the school medical officers of this country during 1935, involving 1,687,331 children. The nutrition of 14·6 per cent. was found to be excellent, 74·1 per cent. were normal, 10·6 per cent. slightly subnormal, and 0·7 bad. Those figures spoke for themselves.

POST OFFICE EXPERIENCE

There was another report, quite unbiased, from one who was not engaged in any political controversy on this subject and which appeared in THE LANCET two or three weeks ago by the chief medical officer of the Post Office. In that report Dr. Bashford referred to the conditions of people who came to the Post Office for employment. He pointed out that adolescents examined at 16 years old for employment in the Post Office weighed on an average 16 lb. more and were 1¼ in. taller than those of the corresponding social position 25 years ago, and that 16-year-old girls weighed on an average 10 lb. more and were 1 in. taller than the girls 25 years ago of a corresponding class. That was a very valuable contribution to the subject.

REJECTIONS IN THE ARMY

Sir K. Wood said it was constantly said in the course of these arguments: "Look at the rejections so far as the Army is concerned." That was used as part of the case alleging the bad condition of the nation. Those statements were not well founded. In considering the standard of recruitment they had always to remember that it was based upon the principle that men had to be selected to serve all over the world, in tropical as well as temperate conditions, and must be physically capable of duty under all conditions. The rejection of recruits was not therefore an indication of the physique and nutrition of the general physical population. The standard of recruitment was still high, and the lowering of physical standards which had been alleged in certain quarters related chiefly to slight reductions in chest measurements and to a small reduction in height.

In 1933–34 about 35 per cent. of the recruits who were medically examined were rejected. It was very interesting to see why. The principal causes were: diseases of the middle ear, loss or decay of teeth, defects of the lower extremities, diseases of the heart, insufficient weight, flat-feet, defects of vision, under-chest measurement, and under-height. He had come to this general conclusion from the figures which had been given to him that apart from dental defects the only causes of rejection that could be ascribed to malnutrition were insufficient weight, under-chest measurement, and under-height. The percentage rejected in these three classes were 1·93, 0·75, and 0·59.

THE DISTRESSED AREAS

If signs of deterioration in the health of the people were to be found anywhere one would expect to find them, said Sir K. Wood, in the distressed areas. The problem of those areas had been his special concern and he had tried as far as possible with the information at his disposal to arrive at a true assessment of the position. Anxious watch had been kept for any evidence suggestive of deterioration, and the available vital statistics had been carefully scrutinised. Periodical surveys had been made, particularly of those sections of the population most likely to suffer from the disturbance of nutrition.

A visit by medical officers of his department and the Board of Education for the purposes of such a survey was now in progress in South Wales. Signs had indeed been found of the strain which depression and unemployment unhappily imposed, particularly in the years of adolescences, but the vital statistics afforded no evidence of a halt in the steady improvement in the health figures in those areas which was so satisfactory a feature of the current social history of this country as a whole. The percentage decline in the general annual death-rate between 1911–14 and the year 1934 was for the whole of England and Wales 31 per cent. The corresponding figure for Gateshead was 32 per cent., for South Shields 35 per cent., Sunderland 37 per cent., West Hartlepool 35 per cent., Newcastle-on-Tyne 32 per cent., Tynemouth 32 per cent., and Merthyr Tydfil 23 per cent. The percentage decline in infantile mortality between the same periods was no less marked and compared well with the decline which was taking place in the rate for the country as a whole.

EFFECT OF REHOUSING

It had been said that the efforts to improve housing conditions might even be harmful, because tenants removed from slums to new housing estates might have less to spend on food. Such figures as he had seen bearing on this question were derived from too small a population to be significant. He had accordingly arranged for figures to be obtained from a number of large towns.

Those from Manchester had already been received. The death-rate for the whole city in 1935 was 12·9 and for the new housing estates 7. The death-rate in 12 slum areas averaged over 5 years was 17·3. These were crude death-rates and, of course, standardised rates might qualify the situation; the crude rates were probably too favourable. The infantile mortality-rates were however fully comparable and were even more striking. They showed a rate of 71 in the whole city, 61 in the housing estates, and 120 in the slums.

These figures showed that when they took a wide area the benefit was seen of what housing was doing. Notwithstanding these figures, which he thought could not be beaten by any country in the world, there was a great scope for activity and advance. Malnutrition in the true sense of the term existed and must be fought, and it was manifest that they must continue to pay increasing attention to the nutrition of the nation.

FOODSTUFFS OF SPECIAL VALUE

The special problem which they had to face was how to increase the consumption of those foodstuffs which modern science had shown to be of special health value. There were evident difficulties in devising a system which would enable those foods to reach consumers at prices which they could pay and at the same time secure for producers a just reward for their labours.

The Empire, particularly this country, had played a leading part in the further elucidation of this problem. At the meeting of the Assembly of the League of Nations last September Mr. Bruce and Lord De La Warr were foremost in bringing this matter to the attention of the League, and much useful work was being done by the League organisations, including an important committee presided over by Lord Astor. In this country also valuable work was being accomplished by the Medical Research Council and the British Medical Association. But it was wise for him in framing Government policy to look for guidance most directly to the Advisory Committee on Nutrition, which had recently been reconstituted and enlarged under the chairmanship of Lord Luke, and which included some of the leading scientific authorities of our time—men like Dr. Buchan, Prof. Cathcart, Sir Frederick Gowland Hopkins, Prof. Mellanby, and last but not least Sir John Orr. The committee had recently informed him that the available data regarding the consumption of various kinds of food in this country were insufficient to justify any safe and far-reaching conclusions, and they had recommended that further information in relation to family budgets should be collected. He had consulted the Minister of Labour and arranged for the required information to be obtained in the course of the inquiry which his right hon. friend had recently set up in connexion with the cost-of-living index.

VALUE OF MILK

In the meantime the Advisory Committee had presented a report to him stressing the high nutritional value of milk, and that report accorded with and reinforced the special policy of the Government to increase the consumption of clean safe milk. He agreed with Mr. Johnston that milk was usually regarded as an ideal health food and one of the most nourishing and wholesome in the world.

Under the Milk Act of 1934 about 2,250,000 school-children were receiving a daily ration of one-third of a pint of milk for ½*d*. The local education authorities gave free milk to a large number of school-children now, he thought, totalling over 300,000; and as to children under five they could, if they were in need, obtain milk from the clinics of the country.

Nearly all of the 422 maternity and child welfare authorities provided milk for mothers and children free or at cheap rates, and the total annual provision in this respect had been roughly estimated to be equivalent to 7,000,000 gallons, including dried milk. He had been considering in conjunction with the Minister of Agriculture the possibility of extending the scope of the schemes now in operation, and he could assure the House that the Government would be willing to give their support to any practicable proposals for extension. The matter was closely linked with the whole question of milk marketing which was now under examination by the Milk Reorganisation Commission. It would be highly unfortunate if they took any action which might have the effect of

increasing the price of milk to the general consumer, but he hoped that when the report of the Commission was received it might be possible to find means of enlarging the schemes which were doing such valuable work.

Whatever they might be able to do in special ways, Sir K. Wood concluded, the best nutritional policy of all was to reduce unemployment, to improve the standards of living, and to increase purchasing power. Those were objects which the general policy of the Government was achieving.

Further Criticism

Mr. ACLAND, referring to the question of recruiting, said that if Sir K. Wood was quoting the numbers rejected by the medical staff was it not right to say that the medical staff never saw the recruits at all until they had been weeded out by the recruiting staff? On a proper review of the rejections, he claimed that 46 per cent. in 1932 were due to causes which might have been brought about by malnutrition.

Miss WILKINSON said that they were given to understand it was all a matter of the ignorance of the working-class mother. But neither Dr. Cathcart nor Dr. Hutchison had ever told them how they were going to maintain health on 2*s*., 3*s*., or 4*s*. per head per week. Dr. Janet Campbell had stated that even a slight degree of rickets was the cause of a considerable amount of maternal mortality. Rickets was admittedly due to malnutrition, bad or insufficient food, or lack of sunlight, and it was a poverty disease. It was not fair for the Minister to safeguard himself on the question of the severer form of rickets.

Mr. GRAHAM KERR said that the problem was a biological one. One of the pitfalls which they had to avoid was the use of statistics. In this immensely complex problem of nutrition it would be well for them to scrutinise with the utmost care the evidence before drawing conclusions.

Miss HORSBRUGH said that she wanted to see the actual cases of undernourishment tackled in the proper way. If they merely regarded this as a widespread problem they would not get at particular cases of hardship. There should be further powers to deal with the cases of undernourishment which did occur. Nor would it be right to deal with the problem by arranging to supply milk to all children or all adolescents whether they were in need or not. She believed that the ignorance of food values affected the people of the country as a whole quite apart from those who were actually suffering from lack of food.

An Amendment

Mr. SPENS moved:

That this House has noted with satisfaction the increasing attention that is being given to the problems of nutrition, welcomes the steps which have been and are being taken to secure the maximum supplies of food to our people combined with a reasonable remuneration to our home producers, and approves the continuous efforts of His Majesty's Government to promote better health and social conditions in this country.

He moved this amendment, he said, because he thought it would concentrate the attention of the House on what was really the main problem—namely, that of getting food to the people and of generally improving social conditions in the country.

Major DORMAN-SMITH seconded.

Reply by the Minister of Agriculture

After further debate, Mr. ELLIOT, replying for the Government, said nobody suggested that there were not diets of the people of this country which were deficient, but the deficiencies were being reduced. There were 22,500,000 people in this country in receipt of the optimum diet, a figure never reached before in any period of any society. To have raised half the people to such a point that no further improvement of any kind could be made in their diet was a claim which was, at any rate, worth regard. Furthermore an improvement was taking place in the others. He asked the House to pass the amendment because it was an accurate representation of the facts of the case, and in order to enable a continuance of the advance towards better nutrition for all and the sweeping away of the reproach that many thousands and indeed millions of our people did not get the full advantage of modern powers of production and were not able to consume those foodstuffs which science was ready and waiting to offer them.

The motion was rejected by 359 votes to 139. The amendment was then carried by 350 votes to 141. Put as a substantive motion the amendment was carried by 328 votes to 135.

In the House of Commons on July 13th the Old Age Pensions, the National Health Insurance, and the Widows and Orphans Contributory Pensions Bills passed through Committee and were read the third time.

QUESTION TIME

WEDNESDAY, JULY 8TH

Public Assistance Statistics

Mr. POTTS asked the Minister of Health the number of males and females, both upwards of 14 years of age, specified separately, in receipt of outdoor Poor Law relief: and the number resident in institutions in England and Wales for the years ending 1930–31 and 1935–36, or to the latest available date.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The following is the information asked for: The returns made to my Department do not distinguish the sex of children under 16 years of age in receipt of poor relief. The following statement shows the number of persons over 16 years of age in receipt of poor relief in England and Wales on Jan. 1st in the years mentioned.

Year.	Persons over 16 years of age in receipt of—			
	Out-relief.		Institutional relief.*	
	Males.	Females.	Males.	Females.
1930 ..	202,395	326,322	103,959	72,340
1931 ..	189,259	301,560	99,566	70,677
1935 ..	354,432	448,485	88,709	61,437
1936 ..	338,366	446,696	83,363	59,265

*Excluding rate-aided patients in mental hospitals.

The average numbers of males and females over 16 years of age in receipt of out-relief during May, 1936 (excluding persons in receipt of domiciliary medical relief only), were 312,203 and 422,769 respectively. Figures for institutional relief, distinguishing males and females, are only available in respect of Jan. 1st.

Medical Fitness for Employment in Scotland

Mr. HARDIE asked the Secretary of State for Scotland whether he was aware that out of 126,443 young persons in Scotland between the ages of 14 and 16 medically examined for fitness to enter employment 1906 were rejected and 3816 conditionally certified from 1930 to 1934; and what provisions were being made for those so rejected.—Lt.-Colonel COLVILLE, Under-Secretary of State for Scotland, replied: Yes, Sir, but I would point out that 991 of the 1906 rejections during these five years, and 1353 of the 3816 conditional certificates, were on account of pediculosis and other slight affections which are easily remediable without special medical treatment. Many of the young persons rejected were subsequently employed. The care of young persons so rejected will have the consideration of the departments concerned.

THURSDAY, JULY 9TH

New Unemployment Relief Regulations

Mr. ELLIS SMITH asked the Minister of Labour if he would give an assurance that the new Unemployment Assistance Regulations should not come into operation until Parliament reassembled after the summer adjournment.—Mr. ERNEST BROWN replied: The proposal is that the new Regulations should not begin to operate till Nov. 16th.

Medical Services at Junior Instruction Centres

Mr. DALTON asked the Minister of Labour whether he had taken any steps, otherwise than by the provision of meals, to improve the physical condition of juveniles attending junior instruction centres.—Mr. ERNEST BROWN replied: Yes, Sir. I have been able to announce to local education authorities in England and Wales an amendment to the Statutory Scheme governing the provision of medical services for juveniles attending authorised courses. The amended scheme enables the education authority to arrange for the medical inspection of all juveniles in attendance, and the provision of medical and dental treatment where necessary. I propose in the near future to issue to local education authorities a comprehensive memorandum on the provision of medical services for juveniles attending authorised courses.

Street Collection for Croydon Hospital

Mr. HERBERT WILLIAMS asked the Home Secretary if his attention had been drawn to the discontent on the part of the supporters of the Croydon General Hospital in connexion with the action of the Commissioner of Police for the Metropolis which, if persisted in, would prevent the continuance of the long-established local street collection for that hospital.—Sir JOHN SIMON replied: My attention has already been drawn to this matter as stated in reply to a question on June 29th, the committee which advises the Commissioner of Police of the metropolis with regard to street collections has recently been in consultation with bodies representing various charitable organisations with the object of reducing the number of flag days by means of arrangements providing for combined appeals by kindred charities. It will be appreciated that the success of any such plans would be seriously prejudiced if exceptions were made. Detailed arrangements as regards hospitals are now being worked out by a conference of hospital interests on which the Croydon General Hospital is represented, and I am informed that a statement of the conclusions reached by this body is about to be issued.

Deaths from Silicosis

Captain PLUGGE asked the Home Secretary how many deaths had occurred during the past three years from silicosis; and what steps were being taken to coördinate the activities of all concerned in this matter with a view to reducing the deaths from this cause.—Sir JOHN SIMON replied: I am informed that during the three years 1933 to 1935, 470 deaths were certified by the Medical Board under the Silicosis and Asbestosis (Medical Arrangements) Scheme to have been caused by silicosis or by silicosis accompanied by tuberculosis. In recent years much has been done by safeguarding workers in the industries concerned against inhalation of silica dust and otherwise to reduce both the incidence and the seriousness of the disease. I need not assure my honourable and gallant friend that the importance of this matter is fully appreciated, and there is close coöperation between the Home Office, the Mines Department, the Silicosis Medical Board, and the Medical Research Council.

Small Traders and Farmers and Health Insurance

Major CARVER asked the Minister of Health if small shopkeepers and small farmers were included in the scheme now being evolved by his statistical advisers for the extension of health insurance; and, if not, whether he would consider the desirability of instructing his expert advisers to take the position of these two classes into consideration.—Sir J. BLUNDELL replied: Small shopkeepers and small farmers will be eligible for admission to the voluntary scheme of pensions insurance which the Government has announced its intention of introducing; but as already stated (see THE LANCET, 1936, i., 750) the new scheme will not extend to health insurance.

Supply of Milk to School-children

Mr. EDWARD DUNN asked the Minister of Agriculture if he was aware that 34 county councils in England and 10 county councils in Wales were complaining that they could not provide supplies of milk for the children in their elementary schools, either as a whole or part of their schools; and if he would give the reasons for this position, and state what he was prepared to do to remedy this state of affairs.—Mr. ELLIOT replied: I am aware that in certain areas, where only a few school-children are taking milk, difficulties have been experienced in obtaining supplies on the terms applicable to the Milk-in-Schools Scheme. If the hon. Member will send me particulars of any schools which have been unable to obtain supplies, I will forward the information to the Milk Marketing Board who have already been successful in arranging for supplies to be made available in other cases.

Hospital Accommodation in Kent

Captain PLUGGE asked the Minister of Health if his attention had been called to the congestion in the hospitals in the Rochester, West Kent, and Canterbury districts owing to motoring accidents; and if he would take any action to ensure with the local authorities concerned the investigation of the facilities for hospital treatment provided in the respective districts with the object of securing their substantial increase.—Sir J. BLUNDELL, Lord of the Treasury, replied: My right hon. friend is aware that statements alleging congestion at these hospitals have appeared in the press in connexion with a recent fatality. He is asking for the observations of the Kent County Council and will inform my hon. friend of the result. My right hon. friend understands that a new voluntary hospital is to be built at Canterbury.

MONDAY, JULY 13TH

Compensation for Silicosis

Mr. JOEL asked the Home Secretary whether his attention had been called to the case of Mr. Leonard Cox, of 49, Badger-street, Upper Gornal, Dudley, the facts of which showed that a workman engaged in grinding fire-bricks who contracted silicosis was not entitled to compensation whereas another workman working in the same factory and grinding silica bricks was entitled to compensation; and whether he would provide that these anomalies in the compensation law should be altered.—Mr. GEOFFREY LLOYD, Under Secretary, Home Office, replied: The Home Office has no evidence that workmen engaged in the fire-brick industry as distinct from the silica brick industry are exposed to the risk of silicosis so as to justify the making of a compensation scheme to cover them. As regards the case of Leonard Cox, I understand that he has not been examined by the Silicosis Medical Board, and that in correspondence with the Board it was merely certified that silicosis is *suspected;* but I will have further inquiries made.

Deaf Persons

Miss WARD asked the Minister of Health whether he was satisfied that local authorities had taken sufficient advantage of their permissive powers to provide adequately for deaf persons.—Sir KINGSLEY WOOD replied: A considerable number of the local authorities concerned are now making contributions, as recommended by my department, to voluntary associations in aid of the work of finding employment for deaf and dumb persons, and I have no evidence that this work is hampered owing to lack of support from the local authorities.

TUESDAY, JULY 14TH

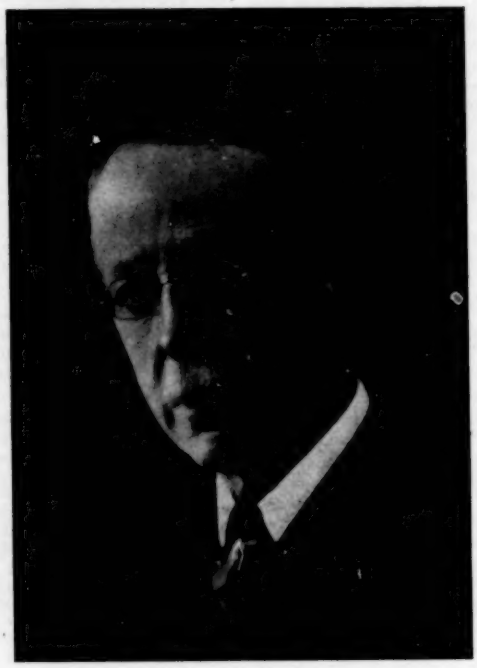
New Unemployment Relief Scales

Mr. LAWSON asked the Minister of Labour why the amount fixed for a man and wife was 24*s.* under the Unemployment Assistance Board, which was less than that granted to similar couples as unemployment benefit.—Mr. BROWN replied: I presume that the hon. Member is referring to the draft Unemployment Assistance Regulations now before this House. I am glad that he has given me an opportunity of making it clear that in all those cases in which this figure is most important—namely, those of householders with dependants and with no available resources—the basic figure for man and wife under the draft regulations will be, not 24*s.*, but 26*s.*

OBITUARY

SIR WILLIAM HAMER, M.D., F.R.C.P. Lond.

Sir William Hamer, who died in London on July 7th in his seventy-fifth year, retired more than ten years ago from the office of medical officer of health for London. He had been associated with the health department of the L.C.C. over a period of 33 years, for 20 of them under Shirley Murphy, and for the remainder as chief during a period which included the difficult years of war and the still more difficult years of post-war depression and recovery. His memory is still green as an epidemiologist, statistician, and organiser whose thoroughness and efficiency were combined with an exemplary courtesy of person and method.



SIR WILLIAM HAMER

[Photograph by Elliott and Fry

William Heaton Hamer was born in Leeds in 1862, the eldest son of John Hamer, J.P. He went to Christ's College, Cambridge, and after passing the mathematical tripos as twelfth wrangler and passing his London B.Sc. went on to St. Bartholomew's Hospital where he took the Kirkes and Lawrence scholarships and was already marked for achievement. Qualifying in 1887, he did a series of house appointments at St. Bart.'s as house physician, ophthalmic house surgeon, assistant demonstrator of physiology, casualty physician, and sat for the M.R.C.P. before making up his mind for a public health career. He took the D.P.H. Camb. in 1891 and in the following year was appointed assistant medical officer for the county of London and shortly after lecturer on public health at his hospital. He published a Manual of Hygiene in 1902 which was still alive in 1925 when it was reissued in a new guise by C. W. Hutt. He gave the Milroy lectures on Epidemic Disease in England: the Evidence of Variability and of Persistency of Type, which established his name as an epidemiologist and was the first of a series of studies of epidemiology, including especially diphtheria, typhoid, and tubercle. For an appraisal of his epidemiological trend of thought reference need only be made to the series of yearly reports originated by Murphy and continued by Hamer in which social changes, migration of population, peculiarities of individual diseases in respect of recurrence and natural history were reviewed in appropriate background. Like his former chief, Hamer claimed no undue credit for preventive measures however promising; he made no propaganda and no play to the political gallery. In 1920 the Royal College of Physicians of London awarded him the Bissett Hawkins memorial medal for the best ten years' record in advancing sanitary science, so that he joined the galaxy which included Manson, Murphy, Dukes, Ross, and Newsholme. In 1923 he received a knighthood in the New Year honours and retired two years later to a well-earned leisure which was unofficially as filled with activities as before.

This brief outline of a remarkable career should be filled in from a frank appreciation by a friend who knew him well: "The personality of Sir William Hamer," he writes, "was so delightful that indulgence in obituary laudation is hard to avoid. He, above all men, would have desired it to be avoided because criticism was his forte. In his official writings and still more in his contributions to the transactions of the section of epidemiology and State medicine of the Royal Society of Medicine, he subjected current opinions to a criticism always urbane but usually trenchant. An excellent example of his critical acumen is his note on tuberculosis in nursing orders contributed to H. T. Bulstrode's official report (1908) on sanatoria for consumption, while even those who disagreed with him benefited from his exposition of the logically weak points in the doctrine of 'carriers' in infectious disease.

"Of his positive contributions to epidemiological science, the most important are contained, in embryo or complete, in the Milroy lectures for 1906. There will be found his pioneer mathematical work on the genesis of periodicity in measles. Although Hamer was a trained mathematician, he never obtruded mathematical methods and relied much—perhaps over-much—on graphical representation. He never extended this work and when, in 1929, the late H. E. Soper developed the mathematical method further, Hamer spoke with characteristic generosity of his successor's work and with characteristic modesty of his own contribution. That the ebbing and flowing of the susceptible population is a complete explanation of periodicity may not be true, but it is certain that Hamer first gave precise expression to an important part of the truth. In these lectures Hamer made his first contribution to historical epidemiology, enlarging the concept of influenza and giving sound reasons for believing that the mysterious 'sweats' of the sixteenth century were part and parcel of the epidemic constitution of influenza. To this subject he returned again and again; it is the main theme of his stimulating book, 'Epidemiology, Old and New,' published in 1928, and of his latest papers.

"It would be mere flattery to pretend that his later developments of this theme secured general approval. A charm of his early literary style, added to its urbanity, was an allusiveness, a habit of suggesting but not pursuing trains of thought. This gradually became a mannerism which made his papers more and more difficult to follow. His predilection for graphs and avoidance of arithmetical statements led him to riot in diagrams of a mysterious complexity. His generous enthusiasm for the work of the father of British epidemiology reached such a pitch, that of recent years it was never doubtful whether in a paper or a contribution to a discussion he would mention Sydenham, but only matter of speculation as to the precise context in which that illustrious name would appear. He had a keen eye for the logical fallacies in a bacteriologist's or a statistician's argument but was not quick to grasp the point of an attack upon his own hypotheses. He was never annoyed by criticism, few men can have had less personal vanity, but he could not be argued with. He would hear a criticism with a kindly, *not* a superior, smile and then either repeat what he had said before in practically the same words, or refer his critic to some aphorism of Sydenham which did not *seem* to have much bearing upon the point at issue.

"This puckishness, charming as it was, must be regretted; because he was not merely learned and acute, he was *wise* and his wisdom was of a kind which is certainly not abundant. He strove to develop general principles, to look at epidemiology as a whole, not as a heterogeneous mass of different problems, but as one problem. The truest thing one could say of him—and a thing he would have liked to be said of him—would be that he was of the metal of Charles Creighton. He was more urbane, less well acquainted with libraries, better acquainted with mathematical and less well acquainted with biological methods, far more familiar with administrative methods and much more of a hero-worshipper. But, fundamentally, the two men were similar. Both were philosophers and both tried to bring out the essential merits of unfashionable methods of thought remaining, in Creighton's case, fiercely, in Hamer's case, urbanely, sceptical of modern values."—M. G.

Sir William Hamer married Agnes, third daughter of Mr. Joseph Conan, who survives him, with one son and one daughter.

CORRESPONDENCE

INFANTILE DIARRHŒA IN INSTITUTIONS

To the Editor of THE LANCET

SIR,—Your leading article last week drew attention to the high death-rate from enteritis in hospitals. You justly pointed out that the epidemic diarrhœa in the late summer months has ceased to exist, but the death-rate in children from enteritis is still one of the chief causes of death under one year. Dr. Craig's experience at the Royal Maternity Hospital, Edinburgh, in giving cow's milk to babies under a fortnight old emphasises the importance of breast milk at the early period of life. Everyone will agree with this; but why should it be necessary to give cow's milk or any artificial food in a maternity institution during the first fortnight of life?

Some years ago I was asked to act as pædiatrician in the maternity wards at St. Mary Abbots Hospital, and seeing that there was a scarcity of breast milk in some cases I advised all the mothers to express their milk into a glass vessel after feeding their own child. They did this every three hours. In this manner we collected a considerable amount of milk, mixed it all together, and brought it to the boil; afterwards the glass vessel was placed on ice and the milk kept perfectly fresh for 24 hours and often longer. There was some difficulty at first, because the nurses said that the mothers had not sufficient milk, but we soon found that this was not the case. Complementary feeds of breast milk were given where the test feed showed that the child was not getting enough. Breast milk was also given to cases of marasmus in the hospital wards. This scheme is largely employed in Germany in all maternity institutions, and if a mother refuses to express her milk she is promptly advised to leave the institution. If we want to reduce our high neonatal mortality this scheme should be more generally adopted in this country. With regard to the death-rate from enteritis in hospitals of children under one year. This problem seems quite as difficult to solve as the neonatal death-rate. Some hospitals are refusing to admit cases of diarrhœa and vomiting into their wards because of the fear of infecting all the other children. The death-rate in some of the hospitals is 50 or 60 per cent.

Twelve years ago I was invited by the public health authority to start a scheme for treating cases of enteritis in the home, and I published in your columns (1927, i., 176) a description of the treatment.

Roughly it consists in stopping all food for 24 hours and giving half normal saline by the mouth in feeding bottles, the child being allowed to drink as much as it wants. The next day malted milk was given which is low in fat and high in carbohydrate, 3 teaspoonfuls of malted milk with 3 oz. of water every 3 hours, in this way the child was receiving 270 calories per diem. The bowel was washed out daily with saline, and this was continued until the diarrhœa stopped; if the diarrhœa continued after a week bismuth mixture was given. After about six days half a teaspoonful of dried milk half cream or 30 drops of cow's milk were given in addition to the malted milk. The amount of milk was cautiously increased every other day, and the malted milk gradually reduced. The amount of food required varied of course in every case; the nursing of these cases was carried out by the district nursing association. I sent very few cases into hospital. I have been able to trace all the deaths that occurred in babies who had had the treatment. The results so far are as follows. The nurses have attended 1072 cases in their own homes, and there have been 41 deaths, only one death occurred in the home, making a death-rate of nearly 4 per cent. The disease is not infective in the home; for instance, during the last five years in 338 families the patient was the only case in 321 families, and there were only 17 families where more than one case occurred. During the last five years there were 122 severe cases with temperatures of 103° or 104° with dehydration and collapse, and 139 mild cases.

The reason that there is no infection in the home is that it seldom happens that there is more than one child in a family under one year. One of the great disadvantages in treating these cases in hospital is that usually all the infants are placed together in the same ward, mostly under one year. Even glass cubicles between the beds does not keep off infection. I believe the real problem is the difficulty in nursing these cases. There are not enough nurses in the children's wards. I found that the cause of the disease was in the great majority of cases dietetic. The quality or quantity of the food was wrong.

Catarrhal conditions were responsible for a certain proportion, especially nasal catarrh, which spreads downwards and affects the stomach and intestines. Then causes outside the digestive system, such as sepsis in any part of the body, had to be taken into account. I have so far only seen two cases in which one could say that the primary cause of the diarrhœa was due to middle-ear disease. The diarrhœa began to stop directly after discharge from the ear was noticed. It is common to find muco-pus in the internal ear at post-mortems, but in these cases the child has usually died with symptoms of general septicæmia, so that muco-pus in the ear I suppose forms part of the general septicæmic condition. The bacteriologist could throw very little light on these cases, apart from three short outbreaks of Sonne dysentery no specific organisms were found in the stools.

Prognosis is certainly difficult. It is never safe to say that a baby will recover even when the symptoms are slight and the child does not appear to be ill. It is therefore most important to treat all cases seriously from the beginning. The chances of recovery are on the whole good if the treatment has commenced before the third day of illness in acute cases; if the treatment has begun only after the third day the prognosis is more doubtful, and anyhow the period of recovery is very much prolonged. The only cases that I have sent into hospital have been those in which the mother would not carry out instructions with regard to the quantity of food to be given to the child and cases of septicæmia with toxic vomiting.

The scheme has been so successful that I thought it worth while to publish the results. I believe if doctors would make more use of the district nurses they would get better results in home treatment. The cases require very frequent visits in order to get good results.—I am, Sir, yours faithfully,

RONALD CARTER.

Stafford-terrace, Kensington, July 13th.

To the Editor of THE LANCET

SIR,—It is noteworthy that of Dr. Craig's cases 39 out of 41 occurred in artificially fed infants. This would seem to suggest (1) that the feed given was not the most suitable; (2) that the organism must have been introduced orally. The occurrence of stomatitis tends to bear this out. We would suggest that lactic-acid milk is worthy of trial in that it inhibits growth of organisms, renders protein digestible, maintains optimum gastric acidity, and enables a high caloric feed to be given in small volume. In our hands it has proved the most suitable feed for infants of all ages, even for premature infants where breast milk is not available. Whereas Dr. Craig's cases seem to have been associated with an intestinal infection, it has been our experience in this hospital that outbreaks of diarrhœa which have occurred from time to time have all had a parenteral origin. Since the institution of strict bed isolation nursing for all infants we have had no outbreaks of diarrhœa due to enteral infection carried from the stools of one infant to another.

Referring to your leading article, we should like to point out that a proper conception of the causes of diarrhœa in infant wards is important. The majority of cases of diarrhœa fall into one of the following groups and can be treated accordingly: (1) fermentative, (2) infectious, (3) parenteral, (4) inanition. The measures best calculated to combat these conditions are the use of suitable feeding formulæ combined with strict aseptic nursing. With regard to the presence of "small amounts of muco-pus in the middle ear" found at autopsy, we are convinced of the importance of middle-ear and mastoid infections, as we have found severe and spreading inflammations almost amounting to osteomyelitis of the petrous part of the temporal bone in a large series of post-mortem examinations. In some of these cases there were no manifest signs of otitis or mastoiditis, although routine inspections of the tympanic membranes were carried out in all cases.

To conclude, we would suggest that in the nursing of infants in hospital the principles of asepsis should be rigidly adhered to. The wearing of masks and gowns combined with adequate nursing is an essential part of this system and is no more likely to give us a "spurious impression of security" than the elaborate technique of the operating theatre. While we do not claim that the wearing of masks is an infallible prevention of parenteral infection, we are definitely of the opinion that it has lowered the incidence of this serious condition.

We are, Sir, yours faithfully,

W. E. CROSBIE,
Medical Superintendent, Alder Hey Children's Hospital, West Derby.

CÉCILE ASHER,
Senior Resident Medical Officer.

Liverpool, July 14th.

FOCAL INFECTION

To the Editor of THE LANCET

SIR,—In the leading article on focal infection in your issue of June 27th you deduce from certain evidence that "the adherent of the focal infection doctrine must seek refuge in some indirect expression such as 'allergical reaction' or the action of 'endotoxin.'" You then go on to draw attention to the fact that Zinsser has shown that there is no adequate proof that "endotoxins" as generally understood have any concrete existence.

On the other hand, there is abundant proof, quoted and accepted by Zinsser in the 1936 edition of "A Textbook of Bacteriology," that streptococcal exotoxins do exist; and it seems probable that the adherent of the focal infection doctrine is referring to these.

It is interesting to note that Zinsser in the book quoted above says (p. 346):

"*Streptococcus Viridans Infections.*—Most of the non-hemolytic, viridans or green-producing streptococci are harmless saprophytes. Some varieties, however, chiefly the organism known as Streptococcus viridans, are associated with subacute and chronic diseases. These organisms cause apical abscesses of teeth, diseases of the middle ear and infections of the accessory sinuses of the nose. They play a prominent rôle in focal infections, and the associated metastatic infections, toxic and allergic disorders which follow the long continued growth of bacteria in the tissues of an animal."

Is it likely that he is referring here to the effect of the mere mechanical presence of bacteria?

I am, Sir, yours faithfully,

Reading, July 14th. GUY ELLINGHAM.

A NEW DYSTROPHY OF THE FIFTH FINGER

To the Editor of THE LANCET

SIR,—I cannot agree with much of the matter of Mr. St. J. D. Buxton's letter. I had given the question of the condition being of congenital origin very careful consideration, and I had come to the conclusion that it could not be so for these reasons. First, in all the affected phalanges there are quite definite bone changes and the normal bony trabeculæ

are not seen. This in itself suggests that the changes are pathological and not congenital. Secondly, the lesion is not noticed at birth and becomes apparent five or six years later.

The cases of radial deviation of the terminal phalanx which Mr. Buxton describes are, I agree, congenital, but in these cases the fault lies not with the terminal phalanx, but with the middle phalanx which is shortened and maldeveloped. This condition is apparently a Mendelian dominant and occurs in several members (usually female) of the same family. I have records of an example of this condition which has occurred in five members of the same family. There is, I think, nothing common to these two conditions, the "taloned" phalanx which I described in my article, and the radially deviated terminal phalanx which Mr. Buxton described in his letter. In the one a terminal phalanx is the seat of changes in its bone structure and is curved in the palmar direction, while in the other the middle phalanx is deformed (and has no pathological change in its structure) and a normal terminal phalanx articulates with it unevenly. In the former there is no history of a similar condition in any of the other members of the family, in the latter other members are also affected. In the former there are no other changes in the skeleton or general appearance, in the latter one often sees the changes which Mr. Buxton describes in his letter.

It seems probable that the matter cannot be settled until one is able to obtain a piece of the affected bone for microscopic examination; but so far this obviously has not been possible.

I am, Sir, yours faithfully,

A. ROBINSON THOMAS.

Harley-street, W., July 9th.

THE MEDICAL DIRECTORY

To the Editor of THE LANCET

SIR,—To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification.

We are, Sir, yours faithfully,

J. AND A. CHURCHILL LTD.

104, Gloucester-place, Portman-square, London, W.1, July 13th.

MEDICAL NEWS

University of Oxford

Sir Wilfred Grenfell has been elected to an honorary fellowship at Queen's College.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

M.D.

Emily M. Booth, F. C. Jackson, C. J. MacQuillan, and T. J. O'Sullivan.

M.A.O.

R. F. W. K. Allen.

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Therapeutics and Pathology.—•J. G. Waugh, •Brian Mayne, •H. A. Dougan, W. C. Good, S. L. Wray, Elizabeth L. J. Ryan, R. T. Burkitt, D. B. Taylor, J. R. Murdock, William Sandford, W. W. M'Grath, J. E. Murphy, T. W. Buckley, D. M. R. Barry, R. A. Lutton, Rosaleen de C. M'Cormick, Samuel Rubin, H. J. R. Henderson, F. A. Hanna, T. P. Griffin, Bridget P. Mansfield, Robert Wilson, R. W. Temple, D. E. Meares, Mary C. Conlin, Jack Freedman, Emily E. E. E. Hill, W. J. E. Pietersen, H. M. Carson, B. W. Hughes, G. D. Stevenson, Noel M'Sharry, C. W. L. Macnamara, M. E. C. Balmer, C. G. Reilly, F. R. T. Hollins, J. C. M'Neilly, J. F. Rishworth, R. J. Balfe, and L. N. Lynch.

Medicine.—M. R. W. Spacek, Peter Delap, J. H. A. Jewell, Monty Toohey, B. P. P. Berney, H. A. Daniels, Eileen D. Maunsell, J. R. Sides, C. W. Greene, E. T. M'Cartney, E. W. L. Thompson, G. B. Jackson, B. G. Kearon, G. L. Daly, F. MacD. Byrn, J. M. Bryson, Francis Keane, S. E. M'Connell, D. T. Bardon, P. G. Patton, Margaret Perry, T. S. Agnew, R. F. Cantan, W. E. Counihan, Cecil Eppel, J. G. Cunningham, N. J. Smith, D. P. Beckett, A. E. B. de Courcy Wheeler, D. H. A. Irwin, H. W. W. Good, D. S. Toole, Hyman Elliman, E. R. N. Cooke, A. J. Reeves, and Eithne M. O'Connell.

Surgery.—•G. C. Blackham, J. H. A. Jewell, G. B. Jackson, E. W. L. Thompson, F. MacD. Byrn, D. T. Bardon, Peter Delap, J. M. Bryson, E. T. M'Cartney, R. F. Cantan, Monty Toohey, B. P. P. Berney, H. W. W. Good, Hyman Elliman, Francis Keane, S. H. Morrison, Eithne M. O'Connell, D. H. A. Irwin, W. D. Chesney, Leslie Fridjohn, and G. L. Daly.

Midwifery.—•E. R. N. Cooke, G. C. Blackham, J. R. Sides, N. J. Smith, A. E. B. de Courcy Wheeler, Isidore Shreider, W. J. G. Warwick, D. J. H. Douglas, A. J. Reeves, G. K. Donald, O. M. Harrison, S. H. Morrison, Rebecca M. R. Pike, C. J. S. Flood, D. B. George, and A. E. Fannin.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS

H. F. P. Grafton.

D.P.H.

Part I.—H. D. M'Gorry.

Part II.—•W. C. B. Harrison, •P. B. Robinson, H. O. Mackey, H. R. Rogers, R. I. G. Reid, H. D. M'Gorry.

D.P.M.

Part I.—H. J. Eustace.

• Passed on high marks.

University of Aberdeen

On July 8th the following degrees and diplomas were conferred:—

Ph.D.—H. W. Kosterlitz.

M.D.—H. E. Shortt (with commendation), J. D. Murray, J. R. Mutch, William Sutherland, and M. L. Thomson.

M.B. Ch.B.—A. H. Cruickshank, Cicily M. Glennie, J. B. Petrie, R. P. Walker (with second-class honours), J. W. L. Bain, David Barclay, P. H. Beattie, Alexander Brown, Alexander Buchan, Alexander Burness, G. L. Byth, W. M. Chapman, Albert Christie, J. McD. Christie, Mary J. C. Christie, N. S. Clark, W. C. Cockburn, Albert Craig, Eva M. Cran, A. B. Davie, G. G. Dickie, J. McW. Duncan, W. I. Emslie, G. A. C. Esson, W. J. S. Ewan, C. B. Findlay, Margaret Forbes, Elizabeth C. Fraser, H. S. Fraser, W. J. Godden, T. B. Gordon, C. E. Gorrod, John Grant, Christina A. Gunn, D. A. Hamilton, A. B. Hay, Esther Hendry, Harry Hutcheon, J. L. Johnston, C. E. Lumsden, Frances R. McIntosh, Winifred M. R. Mackenzie, W. G. P. Mair, Mary M. Martin, George Morrice, James Phillips, W. E. Pyper, N. A. Ross, J. F. B. Sanguinetti, I. C. Simpson, R. A. Smart, J. M. Thomson, R. J. Twort, Margaret S. Watson, and M. H. Webster.

D.P.H.

Elsie Home and A. McG. Michie.

West London Medico-Chirurgical Society

The fifty-fourth annual dinner of this society was held on July 8th at the Trocadero Restaurant, London. Dr. Bernard Myers, the president, was in the chair. After the loyal toasts, Mr. Cyril Norwood, D.Litt., president of St. John's College, Oxford, proposed the health of the president and the society. Commenting on the adjective medico-chirurgical, he said that the hybrid liaison showed that the Romans had no word for surgery. Soon it would have to be expanded to medico-psycho-chirurgical. Speaking of the general practitioner, Dr. Norwood said that he thought that there was too much panel practice in the country to-day and he was afraid that it would destroy the present relationships of patient and doctor. This would be a tragedy; the practitioner had a position as the family's stand-by that belonged to no other calling. Panel practice might bring about the state of affairs described by Plato, when there were slave doctors who treated the slaves. The slave doctor never knew his patients as individuals and he only prescribed medicine. The freeman discoursed with and about his patient, consulting with his colleagues, and he not only prescribed treatment and instructed the attendants but he himself carefully watched progress.—Dr. Bernard Myers, replying, welcomed the guests. He described the formation of the society by Keetly in 1882; it did valuable work and promoted discussion and social intercourse between the members of the profession. There was one annual oration, the Cavendish lecture, and a triennial gold medal was awarded for meritorious work.—Mr. McAdam Eccles proposed the health of the guests and of the kindred societies, to which Mr. H. L. Eason, Mr. John Hassall, and Dr. Robert Hutchison replied. The last-named remarked that the smaller societies had more good fellowship than the larger ones, for they gave better opportunities for members to get to know each other and for free and informal discussion. Messrs. Flotsam and Jetsam entertained the company with songs.

Royal College of Surgeons of England

A quarterly meeting of the council was held on July 9th, with Sir Cuthbert Wallace, the president, in the chair. He was re-elected president for the ensuing year, and Sir Charles Gordon-Watson and Mr. Victor Bonney were elected vice-presidents. The offer made by St. Bartholomew's Hospital that a part of the college research work should take place at the hospital during the rebuilding of the research laboratories was accepted.

The following professors, lecturers, and demonstrators were appointed for the ensuing year: *Hunterian Professors*: Mr. E. C. Sprawson, odontomes; Dr. Russell Reynolds, movements of the œsophagus, stomach, and duodenum during the passage of an opaque meal; Mr. C. P. G. Wakeley, surgery of the parapituitary region; Mr. D. W. C. Northfield, some observations on headache; Dr. Solly Zuckerman, morphological and functional homologies of the male and female reproductive systems, the endocrine analysis of the reproductive cycle of primates, the influence of neurovascular processes on menstruation; Mr. Philip Wiles, postural deformities; Mrs. Philippa Martin, effect on the eye of radium used for treatment of malignant disease in the neighbourhood; Mr. J. H. Saint, the B.I.P.P. treatment of acute osteomyelitis; Mr. A. R. D. Pattison, Cushing's syndrome, with special reference to the possibilities and results of surgical treatment directed at the pituitary body; Mr. F. H. Bentley, experimental nerve anastomosis; and Mr. A. S. Kerr, the higher autonomic control of the hollow viscera. *Arris and Gale Lecturers:* Dr. John Beattie, two lectures, and Dr. David Slome, the nervous factor in traumatic shock. *Erasmus Wilson Lecturers:* Mr. Robert Davies-Colley, demonstration on pathology; Dr. L. W. Proger, demonstrations on pathology; Dr. Cedric Keith Simpson, demonstration on the pathology of the adrenal gland in relation to sudden death. *Arnott Demonstrator:* Dr. A. J. Cave, demonstrations on the contents of the museum.

Dr. Proger was re-elected pathological curator of the museum, and Sir Frank Colyer was reappointed hon. curator of the odontological collection, and Mr. C. J. S. Thompson hon. curator of the historical collection.

The Hallett prize, given in connexion with the primary fellowship examination, was awarded to Mr. K. W. Starr (Sydney), and the seventh Macloghlin scholarship to Mr. J. A. Ward.

Diplomas of membership were granted to F. C. Collingwood, S. G. Griffin, T. P. N. Jenkins, and A. H. Masina, and licences and diplomas were granted jointly with the Royal College of Physicians, as follows:—

L.D.S.—J. L. Berry, B. O. T. Bery, R. C. Blackmore, A. T. C. Bowden, K. H. Brattle, A. N. Brimelow, F. S. S. Brooks, A. G. Brown, H. K. Burgess, Ferdinand Coen, D. T. Cooper, D. N. de Gruyther, Emile du Toit, R. C. Fletcher, W. I. N. Forrest, W. McI. Glen, C. H. Greaves, J. T. S. Hutchins, F. L. Ingram, J. S. Knight, I. M. Manchanda, F. G. Matthews, R. J. Newman, A. G. Oldale, R. F. Parfitt, G. H. Pitman, C. C. B. Plumley, D. R. P. Price, R. G. Siggers, C. O. B. Stibbs, W. H. R. Still, R. W. H. Tavenner, G. J. Turketine, H. G. B. White, and Walter White.

D.P.H.—P. N. Bardhan, W. F. Cooper, J. W. Crawford, A. M. Foxe, D. F. Irvine, R. A. Leader, J. C. J. McEntee, M. C. Polhill, C. F. Price, W. W. Sinclair, Harry Smith, Dorothy Taylor, and Marjorie S. Wilson.

D.P.M.—W. J. Barbour, T. E. Burrows, T. M. Cuthbert, F. A. Frank, J. D. M. Griffin, M. K. Johnston, Alexander Kennedy, Robert Pakenham-Walsh, R. F. Roberts, C. H. Rogerson, L. W. Russell, M. H. Shah, A. B. Stokes, D. H. H. Thomas, W. H. Whiles, M. R. P. Williams, and J. W. Wishart.

D.L.O.—D. B. Craig, A. K. M. Khan, C. B. Nicholson, K. K. Rao, and J. P. Sewell.

The following hospitals were approved, with the posts specified, for recognition for the six months' surgical practice required of candidates for the final examination for the fellowship:—

Bolton Royal Infirmary (resident surgical officer and assistant resident surgical officer); *North Staffs Royal Infirmary (first, second, and third house surgeons); *Derbyshire Royal Infirmary (first, second, and third house surgeons); *Northampton General Hospital (first and second house surgeons); and *Grimsby and District Hospital (senior and junior house surgeon).

* Temporary recognition until July 31st, 1937.

Board of Control

The Board of Control have appointed Prof. J. Shaw Bolton, formerly medical superintendent of Wakefield Mental Hospital, to be a temporary commissioner.

University College, London

The Bayliss-Starling memorial scholarship in physiology has been awarded to Dr. C. F. Code.

University of Sheffield

Dr. W. Skyrme Rees has been appointed demonstrator in anatomy in the University.

Queen's University, Belfast

At the summer graduation ceremony on July 10th the honorary degree of LL.D. was conferred on Prof. Denis Coffey, president of University College, Dublin, and the honorary degree of D.Sc. on Dr. T. H. Milroy, emeritus professor of physiology in the University.

Royal Dental Hospital of London

The prize distribution and conversazione will be held at the Royal Dental Hospital on Tuesday, Oct. 6th, at 8 P.M. Sir William Willcox will preside. The clinical "At Home" and annual dinner will be held on Saturday, Nov. 21st. The dinner will take place at the Trocadero, London, W., and Mr. J. H. Badcock will be in the chair.

Moynihan Fellowship

The association of Surgeons of Great Britain and Ireland invite application for this fellowship which is of an annual value of £350. The object of the fellowship is to allow the holder to follow a definite line of research or to study surgery in specified clinics either at home or abroad. Applications should reach the hon. secretary of the association, 65, Portland-place, London, W.1, before Sept. 30th.

Town and Country Planning

A town and country planning summer school will be held at the Salisbury Diocesan Training College from August 27th to Sept. 2nd under the presidency of Sir Raymond Unwin. The subjects for discussion include the relation of the Public Health Act to town planning which will be opened by Mr. J. J. Clarke. The hon. secretaries of the school may be addressed at 13, Suffolk-street, London, S.W.1.

Anonymous Gift to Hospitals

King Edward's Hospital Fund for London has received a gift of £10,000 from an anonymous donor towards the general support of the London hospitals. This sum will be included in the grants made by the King's Fund to the hospitals at the next distribution. The donor, whose anonymity is strictly preserved, has now given in the course of the last 13 years the sum of £88,500, all of which has been distributed to the London hospitals.

Leverhulme Research Fellowships

Leverhulme research fellowships have been awarded to Mr. F. Fairbrother, D.Sc., senior lecturer in chemistry in the University of Manchester (the study of electrolytic dissociation processes and the mechanisms of chemical reactions by the use of induced radio-activity); Mr. S. D. Garrett, B.A., formerly assistant plant pathologist at the Waite Agricultural Research Institute, University of Adelaide (the biological antagonism of the soil microflora towards root disease fungi or crop plants); Mrs. K. Lonsdale, D.Sc., research worker at the Royal Institution, London (relation between structure and physical properties of organic molecules); Mr. R. H. Thouless, Ph.D., head of the department of psychology in the University, Glasgow (a research in visual perception); and Mr. W. E. Williams, D.Sc., lecturer in physics at King's College, London (the determination of the vacuum wave-lengths and the structures of spectral lines by means of his Reflection Echelon).

Grants in aid of research have been made to Dr. A. E. Boycott, F.R.S., late Graham professor of pathology in the University of London (the œcology and genetics of British non-marine mollusca); Mr. J. W. Heslop Harrison, F.R.S., D.Sc., professor of botany at Armstrong College, Newcastle-on-Tyne (researches on evolution and heredity); and Mr. C. W. Valentine, professor of education in the University of Birmingham (the psychology of early childhood). Application forms and further information may be had from the secretary, Leverhulme Research Fellowships, Union House, St. Martins-le-Grand, London, E.C.1.

Metropolitan Hospital-Sunday Fund

The following are among the principal contributions from places of worship already received by the fund this year: St. Columba, Pont-street, £446; St. Michael, Cornhill, £368; St. Andrew, Frognal, £230; St. Michael, Chester-square, £179; St. Mary, Woolnoth, £176; St. Mark, North Audley-street, £120; Brompton Parish Church, £101; St. Helen, Bishopsgate, £90; and Liberal Jewish Synagogue, £84. All show an increase on the amount contributed last year.

Mental Hygiene Reunion

The fourth European Mental Hygiene Reunion will be held in London from Oct. 5th–8th under the auspices of the National Council for Mental Hygiene. The subjects to be discussed include mental hygiene and the cinema, mental hygiene and the nurse, and mental hygiene and the school. The last two days of the meeting will be devoted to visits to various mental hospitals and institutions in London and the vicinity. Further information may be had from the secretary of the council, 77, Chandos House, Palmer-street, London, S.W.1, and application for tickets should be made not later than July 22nd.

E. Alan Johnston and Lawrence Research Fellowship in Medicine

As announced on p. 144 Dr. John McMichael has been appointed to this fellowship by the council of the Royal Society.

Dr. McMichael is a graduate of Edinburgh who qualified in 1927 and obtained the M.D. degree and gold medal in 1933. He has had clinical experience at the Royal Hospital for Sick Children in Edinburgh, and as assistant to the professor of medicine in the University of Aberdeen and in the medical unit of University College Hospital, London. From 1930 to 1934 he worked as a Beit Memorial Research Fellow on the interrelationship of liver and splenic disease and on diseases of the portal and other vessels, and from 1934–36 he has been a lecturer in human physiology under Prof. I. de Burgh Daly at Edinburgh Royal Infirmary.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly meeting of the court of directors, held on July 1st, Mr. W. Kelson, F.R.C.S., senior vice-president, being in the chair, two new members were elected. A sum of £2322 10s. was voted for the payment of the half-yearly grants to the 56 widows and 9 orphans at present on the books. The present scale of grants for widows is between £75 and £60 per annum, according to age; and orphans under 16 years of age receive £50 per annum. In addition a present is usually made each Christmas. A legacy of £500 from the executors of the late Dr. H. J. Selby was reported. Membership is open to any registered medical man who at the time of his election is resident within a twenty mile radius of Charing Cross. Information from the secretary at 11, Chandos-street, London, W.1.

Postgraduate Medical Schools: The King's Visit

On July 14th the King, accompanied by Sir Kingsley Wood, Minister of Health, and Sir Arthur MacNalty, chief medical officer to the Ministry, paid a surprise visit to the British Postgraduate Medical School in Ducane-road, Shepherds Bush, and to the London School of Hygiene and Tropical Medicine, Keppel-street, W.C. At the former he was received by Colonel A. H. Proctor, the dean, and made a tour of the medical school buildings, seeing the library, some of the routine and research laboratories, and the lecture theatre, where an informal class was being held. The King was subsequently conducted round the wards of the Hammersmith Hospital, to which the medical school is attached, by Sir Frederick Menzies, chief medical officer of the L.C.C., and Sir Thomas Carey Evans, superintendent of the hospital.

At the London School of Hygiene the King was received by the dean, Prof. W. W. Jameson, and was conducted round the museum of the school by Dr. H. B. Newham. He expressed special interest in the section commemorating the original researches of Sir Ronald Ross and in those on malaria now being pursued under the direction of Sir Rickard Christophers, F.R.S., who was presented to him, as was also Dr. P. A. Buxton, professor of medical entomology, and Prof. W. W. C. Topley, F.R.S., professor of bacteriology and immunology.

London Hospital Medical College

The Price university entrance scholarship in anatomy and physiology has been awarded to Mr. D. L. Caldwell, of Jesus College, Cambridge.

London (Royal Free Hospital) School of Medicine for Women

The A. M. Bird post-graduate scholarship in pathology has been awarded to Dr. M. V. Sudds, and the Mabel Webb and A. M. Bird research scholarship to Dr. F. C. Naish.

Rebuilding Quetta Hospital

Speaking to the East India Association on July 12th, Sir Henry Holland said that a sum of £14,000 had been raised for rebuilding the Church Missionary Society's Hospital at Quetta, and another £6000 is still needed. Many eye cases were dealt with at the hospital and some 30,000 operations for cataract had been performed there.

Hospital Legacies

The late Mr. Henry Siebert has left £5000 to the Royal Portsmouth Hospital, £3000 to Petersfield Hospital, and £1000 each to several other hospitals, including the Cancer Hospital.

Barratt Maternity Home

On July 6th Princess Alice, Countess of Athlone, opened this home which is attached to the Northampton General Hospital. It is a benefaction from Mr. and Mrs. W. Barratt who gave £20,000 for its erection and equipment. There are 50 rooms on two floors and 30 beds, and the wards range from those with single beds to those with five beds, so that every class of mother is catered for.

Hospitals' Flag Days

Representatives of hospitals which have benefited by flag days have had under consideration a request from the Commissioner of the Metropolitan Police that the number of these appeals should be limited. The Advisory Committee on Street Collections had recommended that flag days in aid of similar objects should be concentrated into one day, and the Commissioner asked the hospitals to consider how far they could apply this principle without jeopardising the financial results of their collections. Since in 1935 there were 66 hospital flag days in London and its outlying districts, it soon became apparent that restriction to a single day of intensive appeal would be impracticable; moreover the choice of a day would be a problem in itself since, for example, Saturday, perhaps the best day for a suburban collection, would be the very worst in central London. Again, many sellers help more than one hospital and for this reason also a one-day appeal would greatly reduce the potential maximum result; while a rainy day might halve the anticipated proceeds for every hospital in London and its outskirts. In the face of these difficulties the recommendation has been made by an ad-hoc committee under the chairmanship of Lord Luke, and accepted by the Commissioner of Police, that one week in each year shall be appointed as a Hospitals week, no other street collections to be held for any object in the 14 previous days. Emblem days—or flag days—will be held on a maximum of three days during Hospitals Week, and can be arranged only on behalf of the hospitals. Not more than one of these collections will be held in the same area, and the proceeds from the whole week of collection are to be equitably divided among the co-operating hospitals. There will also be one additional Emblem Day, probably in October of each year, on which some London hospitals may make collections. A central committee has now been established, with Lord Luke as chairman, which will be responsible for all future arrangements, and whatever the other advantages or disadvantages of the plan, centralised control will at least act as a guarantee against the fraudulent sale of emblems. The new arrangements will be brought into force in 1937, when the week May 2nd to May 8th has been provisionally accepted as Hospitals Week, and a day in October for the second collection. Alexandra Day will then be the only other occasion on which the public will be asked in the streets of London to buy emblems on behalf of any hospital. The provisional recommendations now made are liable to revision after 1937.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.

MONDAY, July 20th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration.

WEDNESDAY.—Noon, Clinical and Pathological Conference (Medical). 2.30 P.M., Clinical and Pathological Conference (Surgical).

THURSDAY.—2 P.M., Operative Obstetrics.

FRIDAY.—2.15 P.M., Dr. A. A. Davis: Gynæcological Pathology.

Daily, 10 A.M. to 4 P.M., Medical Clinics, Surgical Clinics or Operations, Obstetrical and Gynæcological Clinics or Operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 20th, to SATURDAY, July 18th.—ALL SAINTS' HOSPITAL, Austral-street, S.E., Afternoon and Evening course in Urology.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, July 23rd.—3 P.M., Dr. F. Golla: Demonstration.

Vacancies

For further information refer to the advertisement columns

Banbury, Horton General Hospital.—R.M.O., at rate of £150.
Battersea General Hospital, Battersea Park, S.W.—H.S. and H.P., at rate of £130 and £120 respectively.
Birmingham Children's Hospital.—First Asst. to Ear and Throat Dept., £450.
Birmingham, Ear and Throat Hospital.—Second H.S., at rate of £150.
Blackburn, Brockhall (Certified Institution for Mental Defectives) Langho.—Asst. M.O., £500.
Bootle General Hospital.—H.P., two H.S.'s. and Cas. O., each at rate of £150.
Bradford, New Royal Infirmary.—Res. M.O. and Asst. Pathologist, £225.
Brighton, New Sussex Hospital for Women, Windlesham-road.—H.S., £100.
Brighton, Royal Sussex County Hospital.—Cas. H.S., £120.
Brighton, Sussex Eye Hospital, Eastern-road.—H.S., at rate of £150.
Bristol City and County.—Deputy M.O.H. and Deputy Port M.O., £800.
Bristol, Cossham Memorial Hospital.—Jun. Res. M.O., at rate of £100.
Bristol General Hospital.—Cas. H.S., at rate of £100.
Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. Res. M.O., £250.
British Postgraduate Medical School, Ducane-road, W.—Cas. O., at rate of £150. Also H.P. and H.S.
Bucks County Education Committee.—Dental Surgeon. £500.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer, at rate of £130.
Canterbury, Kent and Canterbury Hospital.—H.P., at rate of £125.
Cardiff, King Edward VII. Welsh National Memorial Association. Asst. Res. M.O. for North Wales Sanatorium, £200.
Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ophth. and Ear, Nose, and Throat Depts., at rate of £150.
Colchester, Essex County Hospital.—H.P., £150.
Coventry City Council.—Asst. School M.O. and Asst. M.O.H., £500.
Croydon County Borough.—Asst. M.O.H. and Asst. School M.O., £500.
Croydon General Hospital.—H.S., £125.
Derbyshire Royal Infirmary.—Gynæcological H.S. and Emergency Anæsthetist, £150.
Dewsbury and District General Infirmary.—Sen. H.S., £200.
Doncaster Royal Infirmary and Dispensary.—H.S. to Eye and Ear, Nose and Throat Depts., £175.
Ealing, King Edward Memorial Hospital.—Sen. and Jun. Res. M.O.'s, at rate of £200 and £150 respectively.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O., also H.P., at rate of £200 and £150 respectively.
Edinburgh, Gogarburn Certified Institution, Corstorphine.—Asst. M.O., £300.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S., at rate of £120.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. and Anæsthetist, at rate of £100.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.P. Also Cas. Surg. O. for Out-patient Dept., each at rate of £100.
Harrogate and District General Hospital.—H.P. and Cas. O., at rate of £150.
Harrogate Royal Bath Hospital.—Res. M.O., £156.
Hastings, Royal East Sussex Hospital.—Jun. H.S., at rate of £150.
Hertford County Hospital.—H.P., at rate of £150.
His Majesty's Colonial Service.—Pathologist for Nigeria, £660.
Hull Royal Infirmary.—Second Cas. O., at rate of £150.
Keighley and District Victoria Hospital.—Res. M.O., at rate of £180.
Kent Education Committee.—Dental Surgeon, £500.
Kidderminster and District General Hospital.—Sen. and Jun. H.S.'s, £150 and £100 respectively.
Lincoln, The Lawn.—Asst. M.O., £300.
Liverpool and District Hospital for Diseases of the Heart.—H.P., £100.
Liverpool, David Lewis Northern Hospital.—Two Surg. and two Med. Tutors, also Registrar to Orthopædic Dept.
Liverpool Royal Infirmary.—Gynæcological Reg., £140. Also Sen. Cas. O., at rate of £120.
London County Council.—Social Worker, £235–£12 10s.–£310.
London University.—Readership in Physiology, £600.
Maidstone, Kent, County Ophthalmic and Aural Hospital.—H.S., at rate of £200.
Manchester, Abergele Sanatorium.—Second Res. Asst. M.O., £350.
Manchester, Ancoats Hospital.—H.S., at rate of £100.
Manchester Hospital for Consumption, &c.—Res. M.O. for Ear, Nose, and Throat Dept., St. Anne's Home, £200.
Manchester Royal Eye Hospital.—Out-patient M.O's., each, £200.
Manor House Hospital, Golders Green, N.W.—Jun. M.O., £200.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsthetist, £100.
Middlesex Colony for Mental Defectives, Harper-lane, Shenley.—Second Asst. M.O., £460.
Mount Vernon Hospital, Northwood.—H.S., £150.
Newcastle-upon-Tyne Hospital for Sick Children.—Res. Surg. O., £250. Also H.P. and H.S., each at rate of £100.
Nottingham Hospital for Women.—H.S., at rate of £150.
Port Elizabeth Hospital Board, S. Africa.—Med. Supt. to Provincial Hospital, £1000.
Portsmouth Royal Hospital.—H.P. and H.S., each at rate of £130.
Preston, Sharoe Green Hospital.—Jun. Asst. Res. M.O., at rate of £100.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S., at rate of £120–£150.
Queen's Hospital for Children, Hackney-road, E.—H.S., at rate of £100.
Rochdale, Birch Hill Hospital.—Jun. Res. M.O., at rate of £225.
Rochdale Infirmary and Dispensary.—H.P., £150.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Two H.S.'s for country branch, each at rate of £150.
Royal Naval Medical Service.—M.O.'s.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S., £180.
St. Bartholomew's Hospital, E.C.—Cas. Physician, £145.
St. George's Home, Milman's-street, Chelsea, S.W.—Visiting M.O., £200.
St. Pancras Metropolitan Borough.—Asst. Welfare M.O.'s, each 1½ guineas per session.
St. Thomas's Hospital Medical School, S.E.—Lecturer and Deputy-Director for Dept. of Anatomy, £600.
Salford City.—Asst. M.O. for Maternity and Child Welfare, £500.
Sheffield Royal Infirmary.—Clin. Asst. to Medical Dept., £300.
Shrewsbury, Royal Salop Infirmary.—Res. H.P., at rate of £160.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O., at rate of £150.
Southampton Free Eye Hospital.—H.S., £150.
Southampton, Royal South Hants and Southampton Hospital.—H.S. to Ear, Nose, and Throat Dept. and Res. Anæsthetist, at rate of £150.
South-Eastern Hospital for Children, Sydenham, S.E.—Res. M.O., at rate of £100.
Southern Rhodesia, Rhodesia House, 429, Strand, W.C.—Technical Asstş. for Government Laboratories, each £375.
South London Hospital for Women, Clapham Common, S.W.—Clin. Assts. for Surgical and Skin Out-patients. Also Clin. Asst. for Gynæcological Out-patient.
Southport General Infirmary.—Two Jun. H.S.'s, each £150.
Stockport Infirmary.—H.S., £150.
Stoke-on-Trent, Longton Hospital.—H.S., £160.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Jun. Asst. Res. M.O., £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. O., at rate of £200. Also H.P. and H.S., each at rate of £100.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Res. H.P., £125.
West London Hospital, Hammersmith-road, W.—Res. Anæsthetist, at rate of £100. Also Hon. Asst. Anæsthetist.
Westmorland County Hospital, Kendal.—H.S., at rate of £200.
Weston-super-Mare Hospital.—Res. H.S., £150.
Wigan, Royal Albert Edward Infirmary.—H.S., at rate of £150.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Dental Surgeon. Also Part-time Clin. Pathologist, at rate of £300.
Woolwich and District War Memorial Hospital, Shooter's-hill, S.E.—H.S., at rate of £100.
Worksop, Victoria Hospital.—Jun. Res., at rate of £120.
Yorkshire Children's Orthopædic Hospital. Kirbymoorside.—H.S., £200.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Roade, Northamptonshire.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, STOKE-ON-TRENT.—An appeal is being made for £20,000 for a modern radium and deep-ray therapy department and for £15,000 for the reconstruction and modernisation of the pathological department.

NOTES, COMMENTS, AND ABSTRACTS

THE NEED FOR KEEPING PEDIGREES *

BY EDWIN GOODALL, C.B.E., M.D., F.R.C.P. Lond.

HON. CONSULTING PHYSICIAN TO AND LATE MEDICAL SUPERINTENDENT OF THE CARDIFF CITY MENTAL HOSPITAL

OVER the last fifteen years, judging by the articles on the subject, increasing attention has been given in this country to the study of the hereditary factor in human disease or defect. From their particular point of view, workers in psychiatry have found it necessary to interest themselves in this study for a great length of time. A special responsibility rested upon them to do everything possible to promote interest in the matter of pedigree-keeping. This, in my opinion, they have not recognised. In quite particular measure psychiatrists have had occasion to deplore the futility of history-taking as commonly practised. After due allowance for basal, universal ignorance of the facts, the history obtained, in the field of the psychoses and psychoneuroses, at any rate, is a farrago of fancy, falsehood, evasion, and concealment, with a pinch of fact for flavouring.

The greatly increased attention paid to the study of the hereditary factor in Germany since the advent of national socialism must have struck habitual readers of German medical literature. This in my experience is quite out of proportion to the attention paid here, as evidenced by a perusal of our journals. The policy of the Nazi Government has given an impetus to the study of inheritance in all its aspects. The tendency of human nature to choose the path of least resistance accounts for the immense disparity between study hitherto given to the hereditary factor in disease and that bestowed upon the environmental factor. The latter topic, too, lends itself much more to diffuse platform talk by people of varying degrees of authority, and more easily obtains the attention of the average lecture-going public. Professional inquiry into the causation and prevention of disease has been mainly concerned with the environment, and has arrived at the uterine environment. This, to the best of my knowledge, connotes a full-stop; but then, *da capo*. The biological and anamnestic mysteries interest only the exceptionally curious. All this is lop-sided. The environment, that easy broadway, may well be left to the modern preaching friars, the "uplifters" of society, whilst the more critical-minded diverge into the difficult path of research into inheritance. With advantage we might arrange a fresh rota of lecturers to the public, composing it of persons with a different outlook, who can speak with such knowledge as we at present possess on genetics in general and the importance of the hereditary factor in the causation of disease and defect in particular.

To show how recent is the practical interest taken in this country in the subject of human genetics, even in such a vast and important field as that of the psychoses and psychoneuroses, reference to work done, as far as it comes under the notice of the Board of Control for mental disorders and defect, appeared I believe for the first time in their annual report for the year 1933, under the heading "Genetics, History, After History." Even so, an account of work in this domain was received from only three institutions, one a mental hospital, the other two institutions for mental defectives. For the report for 1934 only two contributions under this heading were received, neither from a mental hospital. Whilst a large number of these institutions are not equipped adequately either with staff, material, or facilities for laboratory research, all could be doing useful work in the field of inheritance. The Royal Medico-Psychological Association has recently been able at any rate to assist in enlisting the interest of the Medical Research Council in this field as regards mental disorder. The Council is subsidising researches respectively into the effects of consanguinity and the genetics of manic-depressive insanity.

THE PEDIGREE

My course in history-taking was spread over 37 years in five mental hospitals, covering also private work. At its inception a uniform system of recording the family pedigree in health and disease was required and still is. We still "take the family history" when we should be studying the pedigree. History forms, like income-tax returns, have become more cunningly comprehensive under the attentions of various committees, but who shall say that the information obtained is equal to the meritorious artistry displayed?

Some three years ago, through the courtesy of Dr. C. P. Blacker, the secretary, I became acquainted with the pedigree-schedules of the Eugenics Society. I have no more recent information, but at that time the society issued two schedules, with explanatory notes; one, comprehensive, and in durable form, costing about 10*s*., the other less so, and of less durable material, at 6*d*. We are reminded by a preliminary note that Sir Francis Galton urged that every educated person should study his own pedigree, and are informed that the society, in issuing the durable schedule, aims only at the modest goal of encouraging people for their own interest and in the interest of their descendants to prepare an accurate record of their pedigrees. "If," says the note, "such a pedigree is completed and kept up to date from generation to generation, this schedule will fulfil, though more accurately and completely, the purpose of the traditional family Bible." All this is praiseworthy, but will not yield results on a large scale. The 6*d*. schedule is designed for medical men or geneticists who are collecting human pedigrees—a limited purpose. A specimen pedigree is attached of a family exhibiting cataract.

It appeared to me that this schedule could be so modified as to make it available at probably rather more cost—say, 1*s*. 6*d*.—for general purposes; I mean for any intelligent person. I have spent much time in recasting and simplifying it, for my private purpose only. The actual pedigree-chart that I use provides by symbols full information regarding health, disease, defect, and abnormality in individual members of a family. My experimental specimen pedigree—paternal and maternal—illustrates a mixture of mental and bodily diseases and defects, such as are apt to be associated. It is clear that the advice of the doctor would be indispensable in keeping the pedigree.

NECESSITY FOR COMPULSORY PEDIGREES

We have recently been informed that the International Federation of Eugenic Organisations has decided to open a central clearing house in London, under the British Committee affiliated to the Federation. I gather the plan is to work this bureau for human heredity on the lines of similar bureaus for animal genetics. The object is stated to be the collection and classification—taking titles of articles—of all published work on the subject, the bringing into touch of people who are working at the same problem, the collection and analysis of pedigrees, and the distribution of information to any organisation or person requiring it. This proposal bears directly on the matter of pedigree-keeping. It seems obvious that, before collecting and analysing pedigrees, it will be necessary to have a uniform system of recording them. My efforts to enlist the interest and coöperation of certain, as I considered, suitable associations in the matter of drawing up a pedigree-schedule based on the lines above indicated, for

* Abstract of an address delivered to the Cardiff Medical Society, March 4th, 1936.

general use, and thereafter taking steps to enlighten the public upon the importance of pedigree-keeping, met with no success. To me the lack of interest which I notice everywhere about this matter is surprising. Matters affecting the safety and welfare of the community, such as military service, the care of the sick and decrepit, balanced representation of different social levels and interests in the community, as reflected by the idealistic system known as local government, the exercise of the franchise—can these be adequately provided for on voluntary lines? My answer is "No." And so I am no believer in any proposal which leaves the responsibility for matters appertaining to human genetics and the prevention of inheritance of disease and defect in any country to the people, on the basis of voluntary effort. As regards keeping pedigrees on the voluntary principle, one might as well expect people voluntarily to make an income-tax return. The State here seems to be assuming responsibility in increasing measure, directly or by duties imposed on local authorities, for the control of matters affecting us all. In my opinion, this matter of the welfare of future generations is at least as important as many of the others. To compel the people to record by notification various illnesses, births, and deaths are measures primarily for present purposes. Their maladies, defects, and disabilities as a whole are unrecorded, and perpetuated at will. These liabilities are passed on to future generations, whereas some effort is made by the State to place upon the existing generation the financial liabilities it has incurred. Our motto should be discipline rather than liberty.

SUGGESTED NATIONAL SCHEME

The proposal outlined hereunder for dealing with the pedigree-basis of national eugenics is founded upon the fundamental proposition, which here is accorded lip-service rather than observation, that the individual is subordinate to the community, and cannot be allowed to claim freedom to decide whether he will or will not follow a procedure drawn up by the State for the purpose of rearing a better race I suggest that, under the Ministry of Health, each local authority should have a department for human genetics (the very large authorities, subdepartments; the small, a combined department) to work in conjunction with the medical officer of health's department, but not be subject thereto, and also with the local department of mental hygiene (covering all psychopathy) that I envisage. It should be under a trained medical director. There should be provision for research in genetics and for field-work; lectures to medical practitioners, and, if there is a medical school in the area, to medical students, to nurses in training, to social service workers, to teachers, to persons still at school shortly before leaving, to the public; a uniform pedigree-keeping schedule for the country; compulsory pedigree-keeping up to date by heads of families, with a penalty for neglect and for false statements; authority should be given to, and a duty placed upon all medical practitioners to examine and advise their patients for the purpose of pedigree-keeping; medical representatives of the department should verify periodically that the pedigrees are kept by the responsible person and details properly recorded. Copies of pedigrees ought to be filed with the department; to be treated as confidential, but to be available for study by the research staff there. Medical practitioners, whether private or under the State or local authority, and non-medical individuals should be entitled to advice on any difficulty in the procedure of pedigree-keeping, the like to be available for all persons in the area who, having disease or abnormality in the family, desire to know the prospects of such appearing in themselves or, if married, in any of their children, present or future. The plan aims at complete knowledge of disease, defect, and abnormality of the population of the area of each local authority, in order to obtain data concerning the hereditary factor with a view to prevention of morbid inheritance. The medical staff of the genetics department to have the right to see with the medical man concerned any individual about whom genetical information is required for the purpose of the department. The pedigree would be kept in the place where it is compiled by the head of the family. An adult, unmarried, or widower or widow, without a recognised family head at the inception of the scheme, would be the compiler. The head of the family, or an adult male or female member of it, moving to the area of another authority, would report the change of address to his department (bureau) and to the bureau of the new authority. If the head moves, the pedigree-duplicate is transferred to the new bureau. Marriage of the mover is reported to his or her new bureau, and by the latter to the bureau holding the pedigree-duplicate. The husband keeps particulars of any family he may have, and reports births, deaths, disease, or any required particulars, as verified by his doctor, to his bureau, all of which are reported by the latter to the bureau holding the pedigree-copy. The latter enters on the copy all facts transmitted by other bureaus, and sees this is done on the original family-copy. On the death of the head of a family, the bureau pedigree-copy is transferred to the bureau of the new head, to whom the family-copy is transferred. When a family becomes extinct, the pedigree is handed to the bureau concerned.

For me to attempt to provide for every contingency would be absurd. The above is an outline. It is clear that contingencies will arise affecting the continuity and exactitude of the pedigree-record which experience must deal with. The pedigree-chart allows by symbol for lack of knowledge in individual cases, for illegitimate unions and the known offspring thereof, and for the case of an individual who has been lost sight of. In connexion with the local department for genetics would be an office for advice to those contemplating marriage. This advice would be based upon the family-pedigrees of the parties and upon a report of a medical examination, made for the purpose, of each. Provision would have to be made for production of the original pedigree or the departmental copy.

HEALTHY OFFICIALS IN WEST AFRICA

THE statistical returns of 1935 for West Africa (Gambia, Sierra Leone, Gold Coast, and Nigeria)[1] show that out of roughly three thousand non-native officials employed there 15 died during the year, giving a crude death-rate of 5·1 per 1000; a further 37 were invalided from the service, giving a rate of 12·4 per 1000. A quarter of a century ago both these rates were at least three times as high, while the average length of service of the "casualties" is now some ten years, or twice as long as in the pre-war years. In the year reviewed only two deaths were attributed to tropical diseases, one to yellow fever and one to trypanosomiasis. The most important cause of invaliding was "psychasthenia" to which 9 of the 37 patients were allocated, and for only 4 of them was the invalidity attributable directly to tropical diseases.

The death- and invaliding-rates are given for the four areas separately for each calendar year from 1916 onwards, while similar information for three different age-groups is provided diagrammatically for the whole area from 1919 to 1935. Such comparisons would be much more clearly made if the rates were computed for groups of, say, 5 years. The annual rates based on these small populations fluctuates so violently as to become quite meaningless—e.g., the death-rate in Gambia was nil in 1933, 35·7 in 1934, and again nil in 1935; the death-rate in Nigeria was more than double that recorded in Sierra Leone in 1928, and less than half as high in 1931. No conclusions can be drawn from such figures, and the

[1] Vital Statistics of Non-native Officials. Price 6*d*. from the Crown Agents for the Colonies, 4, Millbank, S.W.1.

publication of standardised death-rates for quinquennial periods would be a welcome addition to the returns.

CLIMACTERIC

Mrs. Marie Stopes, D.Sc., has launched another crusade, this time to help the middle-aged and elderly; but she hopes the young will also read her new book,[1] so that they may be prepared for the worst, or rather the best, that may happen to them at the climacteric. As with so many of her publications this book contains much excellent and helpful material, but so smothered is it in sentimentality and journalese that one is tempted to throw the book away without bothering to find out what it is all about. Moreover, the book might well have been condensed to about a third of its present length. The author's main points are as follows: First, that men have a change of life as well as women, and that it may frequently be responsible for temporary impotence and other physical and mental disorders. If men (and their wives) were fully prepared for this change in their physiology much mental conflict and discomfort might be avoided. It may be noted that the conception of a climacteric in the male is no new one, though little scientific work has been done on it. Secondly, she emphasises that the climacteric, both in the male and female, is a normal phenomenon through which the healthy individual should pass unscathed, and which should therefore not be anticipated with apprehension. She discriminates between the menopause (or cessation of menses), which obviously can only occur in women, and the climacteric (a more extended phase involving general glandular readjustment) which she feels sure occurs in both sexes. Thirdly, she is emphatic that woman's sex life does not end at the menopause (hence presumably her insistence upon the possibility of post-menopausal conception). Though a good deal of what she has to say on therapeutics will not be generally accepted, the advice given to both sexes on how to handle themselves and each other during the change of life has much to commend it. Mrs. Stopes's almost naïve belief in her own omniscience will astonish those unfamiliar with her previous books, and may irritate afresh those who have met it before. In spite of tedious repetitions and sentimental reflections most people will agree that there is enough helpful material in the book to make it worth reading.

VITAMIN P

Mr. A. F. Dufton (Hunton Bridge, Herts) writes: The report in *Nature* for July 4th of a new vitamin, vitamin P, found in Hungarian red pepper and stated to cure pathological permeability of the walls of capillaries, lends interest to an effect upon the vascular system of ordinary pepper (*Piper nigrum*). It is not, I think, generally known that a good dose, 100 grains, of white pepper is a useful remedy for hæmorrhoids. Pepper, of course, is generally administered in doses of 6 to 12 grains as confectio piperis, but a massive dose is not difficult to take if mixed with gruel.

Appointments

BROMLEY, LANCELOT, M.Chir. Camb., F.R.C.S. Eng., has been appointed Hon. Consultant Surgeon to the South-Eastern Hospital for Children, Sydenham.

KENNY, MEAVE, M.B. Punjab, M.C.O.G., First Assistant in the Department of Obstetrics and Gynæcology at the British Postgraduate Medical School, Hammersmith.

MACPHERSON, A. M. C., M.D., M.R.C.P. Lond., Hon. Assistant Physician to the Elizabeth Garrett Anderson Hospital.

SHERIDAN, M. R., M.B. Liverp., F.R.C.S. Edin., D.L.O., Hon. Surgeon to the Ear, Nose, and Throat Department of the Royal Cornwall Infirmary, Truro.

TAYLOR, DOROTHEA, M.D. Lond., Hon. Assistant Anæsthetist at the Royal Berkshire Hospital, Reading.

TIPPETT, G. O., M.B. Lond., F.R.C.S. Eng., Assistant at the Charterhouse Rheumatism Clinic, London.

Certifying Surgeon under the Factory and Workshop Acts: Dr. A. COWAN (Duns District, Berwickshire).

[1] Change of Life in Men and Women. By Marie C. Stopes. London: Putnam and Co., Ltd. 1936. Pp. 282. 6s.

Births, Marriages, and Deaths

BIRTHS

DYSON.—On July 6th, at St. Mawes, Cornwall, the wife of Dr. Malcolm Dyson, of a son.

HAMILTON.—On July 6th, at a nursing-home, Nottingham, the wife of Dr. Robert Hamilton, of a son.

HOWE.—On July 10th, at Harrow-on-the-Hill, the wife of Dr. E. Graham Howe, of a daughter.

MACDONALD.—On July 5th, at Nodola, North Rhodesia, the wife of Dr. James Fraser Macdonald, of a son.

SNOWMAN.—On July 11th, at Finchley-road, London, the wife of Dr. L. V. Snowman, of a son.

STEWART.—On July 7th, at Hampstead General Hospital, the wife of Dr. Hugh Stewart, of a son.

TERRY.—On July 9th, at Worcester, the wife of Dr. J. O. Terry, of a son.

MARRIAGES

LUFFMAN—CATTELL.—On July 3rd, at Warham All Saints, Patrick Seton Luffman, M.R.C.S., to Barbara Cleophe, eldest daughter of Rev. R. H. Cattell, of Warham Rectory, Norfolk.

MOYNAGH—DINWIDDIE.—On July 11th, at the Priory Church of St. Bartholomew the Great, London, Digby William Moynagh, M.R.C.S., eldest son of Mr. W. J. Moynagh, of Nairobi, Kenya, and Mrs. Moynagh, of Sydenham, to Juanita Isabel Rhind, only daughter of the late Mr. Robert Dinwiddie and of Mrs. Dinwiddie, of Sutton, Surrey.

RICHMOND—MCCREERY.—On July 11th, at Ealing, B. A. Richmond, M.D., to Honora May, youngest daughter of the late J. E. McCreery, of Birkenhead.

DEATHS

ANDERSON.—On July 8th, at Hendon, John Keith Anderson, M.B. Manch., in his 32nd year.

HAMER.—On July 7th, at Dartmouth Park-hill, London, Sir William Heaton Hamer, M.A., M.D. Camb., F.R.C.P. Lond., Medical Officer and School Medical Officer for London, 1911–1925, in his 75th year.

HODGES.—On July 12th, after an operation, Arthur Noel Hodges, M.D. Camb., of Bournemouth, aged 52 years.

MYERS.—On July 8th, at Golders Green, London, Lionel Myers, M.B. Durh.

SNELL.—On July 7th, at Bournemouth, Sidney Herbert Snell, M.D. Lond., formerly of Wandsworth Common and Christchurch, Hants.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 4TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1594; diphtheria, 825; enteric fever, 30; pneumonia (primary or influenzal), 512; puerperal fever, 27; puerperal pyrexia, 123; cerebro-spinal fever, 17; acute poliomyelitis, 4; encephalitis lethargica, 8; dysentery, 12; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 10th was 3651, which included: Scarlet fever, 990; diphtheria, 677; measles, 872; whooping-cough, 508; puerperal fever, 17 mothers (plus 9 babies); encephalitis lethargica, 284; poliomyelitis, 0. At St. Margaret's Hospital there were 21 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 22 (10) from measles, 4 (1) from scarlet fever, 17 (1) from whooping-cough, 30 (5) from diphtheria, 45 (17) from diarrhœa and enteritis under two years, and 12 (1) from influenza. The figures in parentheses are those for London itself.

Birmingham reported 4 deaths from measles, Hull 3, and no other great town more than 1. Sheffield had 3 deaths from whooping-cough, Bradford 2. Deaths from diphtheria were reported from 18 great towns, 3 each from Liverpool and Salford. There were 7 deaths from diarrhœa and enteritis under two years at Birmingham, and 3 at both Croydon and Liverpool.

The number of stillbirths notified during the week was 270 (corresponding to a rate of 39 per 1000 total births), including 33 in London.